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CONTENTS OF REEL 106

1) Stream flow records for the water year 1921 / 1922
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3) Stream flow records for the water year 1923 / 1924
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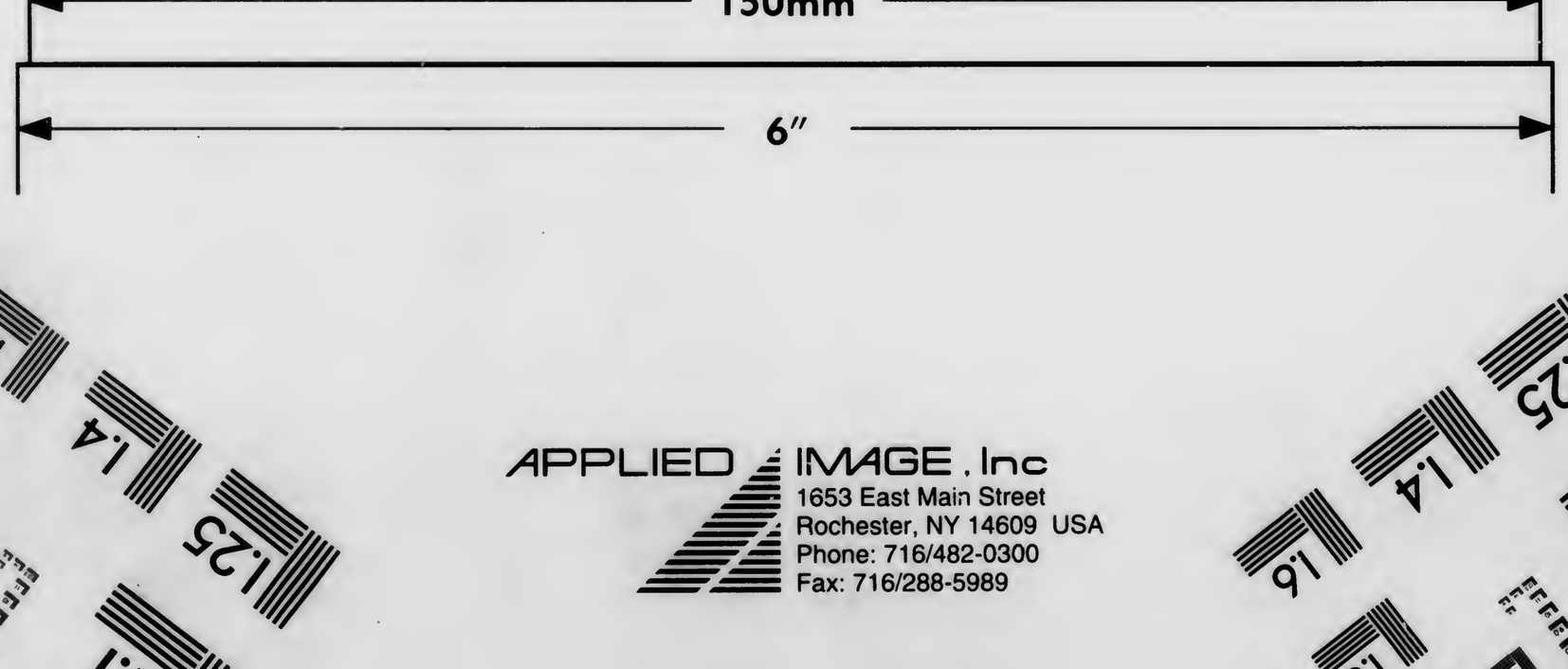

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STREAM FLOW RECORDS
OF
PENNSYLVANIA
FOR THE
WATER YEAR OCTOBER 1, 1921, TO SEPTEMBER 30, 1922

STREAM GAGING, FLOOD WARNING AND PRECIPITATION

This volume, containing records for the year ending September 30, 1922, is the first of a series of publications presenting stream flow records of Pennsylvania to be issued under separate cover. All previous records may be found in the Annual Reports of the Water Supply Commission of Pennsylvania for the years 1910 to 1921.

STREAM GAGING

At the beginning of the year ninety stations were being maintained; two old stations were reestablished during the year and three were discontinued, leaving eighty-nine in operation at the end of the year.

The station on the Schuylkill River at Conshohocken was reestablished on October 18, 1921, and the one on the Youghiogheny River at Friendsville, Md., on July 29, 1922.

The station on the North Branch Susquehanna River at Vestal, N. Y., was discontinued on December 31, 1921; the Shenango River station near Turnerville on August 31, 1922, and the Youghiogheny River station near Confluence on September 30, 1922.

This volume contains detailed hydrographic data for ninety-two stations. Of these, ten were maintained in the Susquehanna Basin for Flood Warning Service and one in the Ohio Basin as a check on other stations on the stream.

There has not been a sufficient number of current meter discharge measurements at seven of the stations for a satisfactory determination of daily discharge and at seven other stations unsatisfactory conditions and changes in control prevented a satisfactory rating. For these stations, daily mean gage heights and discharge measurements are published. The same data are also given for the remaining sixty-seven stations, together with tables of daily and monthly discharge.

The outstanding features of the record are the high monthly total discharges for November; the low flows in September; comparatively short ice periods and low maximum stages.

Although the precipitation over the State was over 3 inches below normal for the year, the records for the Delaware River at Riegelsville, Lehigh River at Bethlehem, North Branch Susquehanna River at Danville and Susquehanna River at Harrisburg show run-offs in excess of the normal, as computed for the climatic years 1910 to 1922 inclusive.

During the month of October, the rainfall was 1.2 inches below normal but the streams did not recede to unusually low stages, as the ground water supply was well replenished, during the month of September, when there was an average rainfall of about 4.7 inches for the State.

In November rains were of almost daily occurrence. The mean for the state was 5.8 inches or 3.2 inches above normal and with but few exceptions the maximum gage heights for the year occurred in the streams, though they were comparatively low, as shown by the following table, which gives the highest stages reached during the year and the maximum stages recorded:

TABLE NO. I

Maximum Stages reached during the year ending September 30, 1922, and Highest Stages recorded.

Location	Stream	Maximum stage during the year ending September 30, 1922	Maximum stage recorded
Riegelsville	Delaware River	20.4 November	41.5 October 1903
Bethlehem	Lehigh River	9.8 March a	25.9 February 1902
Reading	Schuylkill River	9.1 March	23.0 September 1850
Wilkes-Barre	North Branch Susquehanna River	22.3 November	33.1 March 1865
Williamsport	West Branch Susquehanna River	15.8 November	33.5 June 1889
Newport	Juniata River	14.4 November	35.9 June 1889
Harrisburg	Susquehanna River	15.4 November	26.8 June 1889
Kittanning	Allegheny River	13.5 April b	30.4 March 1913
Avonmore	Kiskiminitas River	24.6 November	33.8 March 1907
Lock No. 4	Monogahela River	34.9 November c	45.2 July 1888 c
Connellsville	Youghiogheny River	11.6 November	18.4 March 1907

a Determined from United States Weather Bureau record for Allentown.
b Determined from Franklin record.
c United States Weather Bureau record.

The precipitation for each of the winter months averaged about 0.5 inch below normal, the temperatures were slightly above normal and the average snowfall for the state was 39 inches.

The total rainfall for the months of April and May was about 1.0 inch below normal, while during June, in the midst of the growing period, there was an excess of nearly 1.0 inch.

For July, August and September the mean total rainfall for the state is 11.7 inches, while during these months for this year it was 8.3 inches, being a deficiency of 3.4 inches, which caused the streams to recede to unusually low discharges, as shown by the following table:

TABLE NO. II

Minimum discharges during the month of September 1922, and lowest discharges recorded.

Location	Stream	Minimum discharge during September 1922	Minimum discharge recorded
Riegelsville	Delaware River	1770	870 September 1908
Bethlehem	Lehigh River	430 a	160 October 1910
Reading	Schuylkill River	194	120 November 1914
Wilkes-Barre	North Branch Susquehanna River	2040	820 September 1913
Williamsport	West Branch Susquehanna River	624	382 September 1913
Newport	Juniata River	368	380 June and July 1899 November 1904
Harrisburg	Susquehanna River	3960	2330 September 1900
Kittanning	Allegheny River	880	576 September 1913
Avonmore	Kiskiminitas River	221	60 September 1908
Connellsville	Youghiogheny River	37	11 September 1908 October 1910

a Determined from United States Weather Bureau record for Allentown.

The yearly mean discharges in the three principal basins of the state have been compared with the mean for the 13 years ending September 30, 1922, and with the minimum and maximum yearly means for the period.

In the Delaware Basin, as represented by the Delaware River at Riegelsville, the yearly mean discharge was 11 per cent more than the mean for the 13 years; 79 per cent above that of 1915, the minimum year for the period, and 7 per cent below the 1920 mean, being the maximum during the 13 years. At Bethlehem on the Lehigh River, the mean was 15 per cent more than that for the 13 years; 56 per cent above the minimum in 1911 and practically the same as the maximum in 1920.

The yearly mean discharge in the Susquehanna Basin, as represented by the North Branch Susquehanna River at Danville, was 12 per cent more than the mean for the 13 years; 68 per cent above the minimum in 1911 and 9 per cent below the maximum in 1916. At Williamsport on the West Branch Susquehanna River, the mean discharge was 1 per cent less than the mean for the period; 25 per cent more than the minimum in 1910 and 23 per cent below the high mean for the period in 1912 and 1916. The mean discharge for the Juniata River at Newport was 6 per cent below the mean for the 13 years; 20 per cent above the minimum in 1911 and 29 per cent below the maximum in 1916. At Harrisburg on the Susquehanna River the mean discharge was 6 per cent less than the 13 year mean; 41 per cent more than the minimum in 1911 and 19 per cent below the maximum in 1916.

In the Ohio Basin, as represented by the Allegheny River at Kittanning, the mean discharge for the year was 8 per cent less than the mean for 13 years; 17 per cent in excess of that for 1915, which was the minimum year during the period, and 28 per cent less than that of 1912, which was the maximum during the 13 years. At Connellsville on the Youghiogheny River the yearly mean was 2 per cent less than that for the 13 years (not including 1919, when there was not a complete record); 21 per cent above the minimum in 1915 and 35 per cent below the maximum in 1912.

FLOOD WARNING

The Flood Warning Service was continued for the Susquehanna Basin, although there were only three floods of sufficient magnitude to require warnings.

The year was marked by unusually low stages during floods and by maximum heights occurring in November, which is an uncommon month for floods.

From November 24 to 29 there was a rainfall that may have averaged 3 inches over the Ohio and Susquehanna Basins and perhaps 2 inches on the Delaware drainage area, which produced the highest stages, in the primary streams of the systems, during the year.

The Ohio River at Pittsburgh rose 17 feet to a stage of 25.4 feet on November 29; at Harrisburg the Susquehanna River increased 10 feet, to gage height 15.4 feet on the 30th and the Delaware River at Trenton rose 8 feet, to stage 9.7 feet on the same day.

The North Branch Susquehanna River rose 15 feet at Wilkes-Barre; the West Branch increased 12 feet at Wiliamsport and the Juniata River rose 10 feet at Newport.

The following table shows the estimated stages and those which actually occured:

TABLE NO. III

Predicted and Actual Stages reached November 28-30, 1921.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	15.0	14.3
Corning	Chemung River	12.0	11.3
Towanda	North Branch Susquehanna River	15.0	15.6
Wilkes-Barre	North Branch Susquehanna River	22.0	22.3
Danville	North Branch Susquehanna River	18.0	18.1
Bower	West Branch Susquehanna River	13.0	12.6
Clearfield	West Branch Susquehanna River	9.0	7.9
Renovo	West Branch Susquehanna River	11.0	11.2
Lock Haven	West Branch Susquehanna River	14.0	14.5
Jersey Shore	West Branch Susquehanna River	18.0	16.8
Williamsport	West Branch Susquehanna River	16.0	15.8
Lewisburg	West Branch Susquehanna River	14.0	14.2
Sunbury	Susquehanna River	13.0	13.2
Huntingdon	Frankstown Branch Juniata River	13.0	12.5
Saxton	Raystown Branch Juniata River	9.0	9.2
Newport	Juniata River	15.0	14.4
Harrisburg	Susquehanna River	16.0	15.4

During the latter part of February, a comparatively small amount of precipitation, accompanied by a relatively high temperature, melted the accumulated snow on the drainage basins. The streams reached moderately high stages and nearly all of the ice on them was broken and floated away.

The North Branch Susequehanna River rose 13 feet at Wilkes-Barre; the West Branch increased 8 feet at Williamsport; the Juniata River rose 5 feet at Newport and there was an increase of 5 feet in stage at Harrisburg on the Susquehanna River.

The following table shows the estimated stages and those which actually occurred:

TABLE NO. IV

Predicted and Actual Stages reached February 23-25, 1922.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	12.0	12.4
Corning	Chemung River	10.0	10.0
Towanda	North Branch Susquehanna River	12.0	12.3
Wilkes-Barre	North Branch Susquehanna River	18.0	16.7
Danville	North Branch Susquehanna River	14.5	13.8
Lock Haven	West Branch Susquehanna River	11.0	13.0
Jersey Shore	West Branch Susquehanna River	13.0	11.4
Williamsport	West Branch Susquehanna River	12.0	11.4
Lewisburg	West Branch Susquehanna River	10.0	9.5
Sunbury	Susquehanna River	9.0	8.7
Newport	Juniata River	10.0	10.3
Harrisburg	Susquehanna River	11.5	11.0

Note.—Some of the stages were affected by ice conditions.

In the early part of March an average precipitation of perhaps 2 inches produced the second highest stages in the streams during the year.

The North Branch Susquehanna River rose 10 feet at Wilkes-Barre; the West Branch increased 7 feet at Williamsport; the Juniata River at Newport rose 5 feet and the Susquehanna River increased 6 feet at Harrisburg.

The following table shows the estimated stages and those which actually occurred.

TABLE NO. V

Predicted and Actual Stages reached March 7-9, 1922.

Location	Stream	Predicted Stage	Actual Stage
Binghamton	North Branch Susquehanna River	12.5	13.3
Corning	Chemung River	10.5	10.1
Towanda	North Branch Susquehanna River	13.0	13.6
Wilkes-Barre	North Branch Susquehanna River	19.0	18.7
Danville	North Branch Susquehanna River	15.0	15.5
Bower	West Branch Susquehanna River	9.0	9.2
Clearfield	West Branch Susquehanna River	4.5	4.1
Renovo	West Branch Susquehanna River	8.0	7.5
Lock Haven	West Branch Susquehanna River	11.0	9.6
Jersey Shore	West Branch Susquehanna River	13.0	11.1
Williamsport	West Branch Susquehanna River	12.0	11.2
Lewisburg	West Branch Susquehanna River	10.0	10.1
Sunbury	Susquehanna River	9.5	10.0
Huntingdon	Frankstown Branch Juniata River	7.0	6.6
Saxton	Raystown Branch Juniata River	7.0	7.0
Newport	Juniata River	10.0	10.3
Harrisburg	Susquehanna River	11.5	12.4

PRECIPITATION

The Department of Forests and Waters maintains 9 precipitation stations at which it has installed equipment and employs an observer; at 21 other stations the equipment is supplied by the Department but the records are kept by cooperating parties at no expense to the State.

The United States Weather Bureau maintains a much larger number of stations in Pennsylvania and publishes its records monthly and annually. As it is more convenient for parties using precipitation records to find them all under one cover, a cooperative arrangement was made with the United States Weather Bureau whereby the Department of Forests and Waters has furnished its records to the Weather Bureau for publication in its monthly and annual Climatological Data.

Prior to 1920 the Water Supply Commission published records in its annual reports; for subsequent years they have been published by the United States Weather Bureau.

The following table shows the precipitation stations in Pennsylvania:

TABLE NO. VI

PRECIPITATION STATIONS IN PENNSYLVANIA

ATLANTIC DRAINAGE

Station	County	Drainage Basin
Allentown	Lehigh	Lehigh.
Altoona	Blair	Juniata.
Ansonia	Tioga	West Branch Susquehanna.
Arendtsville	Adams	Potomac.
Bellefonte	Centre	West Branch Susquehanna.
Bethlehem	Northampton	Lehigh.
Bloserville	Cumberland	Susquehanna.
Bustleton	Philadelphia	Delaware.
Carlisle	Cumberland	Susquehanna.
Catawissa	Columbia	North Branch Susquehanna.
Centre Hall	Centre	Susquehanna.
Chambersburg	Franklin	Potomac.
Clearfield	Clearfield	West Branch Susquehanna.
Coatesville	Chester	Delaware.
Colebrook	Lebanon	Susquehanna.
Cresson	Cambria	Juniata.
Doylestown	Bucks	Delaware.
Driftwood	Cameron	West Branch Susquehanna.
Emporium	Cameron	West Branch Susquehanna.
Ephrata	Lancaster	Susquehanna.
Everett	Bedford	Juniata.
Forest City	Susquehanna	North Branch Susquehanna.
Freeland	Luzerne	Lehigh.
George School	Bucks	Delaware.

Station	County	Drainage Basin
Gettysburg	Adams	Potomac.
Girardville	Schuylkill	Susquehanna.
Gordon	Schuylkill	Susquehanna.
Gouldsboro	Wayne	Lehigh.
Gratersford	Montgomery	Schuylkill.
Hamburg	Berks	Schuylkill.
Hanover	York	Susquehanna.
Harrisburg	Dauphin	Susquehanna.
Hawley	Wayne	Delaware.
Holtwood	Lancaster	Susquehanna.
Huntingdon	Huntingdon	Juniata.
Jersey Shore	Lycoming	West Branch Susquehanna.
Lancaster	Lancaster	Susquehanna.
Lansford	Carbon	Lehigh.
Lawrenceville	Tioga	North Branch Susquehanna.
Lebanon	Lebanon	Susquehanna.
Lewisburg	Union	West Branch Susquehanna.
Lloyd	Tioga	West Branch Susquehanna.
Lock Haven	Clinton	West Branch Susquehanna.
Lykens	Dauphin	Susquehanna.
Marcus Hook	Delaware	Delaware.
Mauch Chunk	Carbon	Lehigh.
Mifflintown	Juniata	Juniata.
Montrose	Susquehanna	North Branch Susquehanna.
Mount Pocono	Monroe	Delaware.
Mount Union	Huntingdon	Juniata.
Muncy Valley	Sullivan	West Branch Susquehanna.
Narberth	Montgomery	Delaware.
Neshaminy	Bucks	Delaware.
Palmerton	Carbon	Lehigh.
Philadelphia (a)	Philadelphia	Delaware.
Philadelphia (b)	Philadelphia	Delaware.
Phoenixville	Chester	Schuylkill.
Pottstown	Montgomery	Schuylkill.
Pottsville	Schuylkill	Schuylkill.
Quakertown	Bucks	Delaware.
Reading	Berks	Schuylkill.
Renovo	Clinton	West Branch Susquehanna.
Sadsburyville	Chester	Delaware.
Scranton	Lackawanna	North Branch Susquehanna.
Selinsgrove	Snyder	Susquehanna.
Shawmont	Philadelphia	Schuylkill.
State College	Centre	West Branch Susquehanna.
Stroudsburg	Monroe	Delaware.
Sunbury	Northumberland	Susquehanna.
Towanda	Bradford	North Branch Susquehanna.
Trout Run	Lycoming	West Branch Susquehanna.
Weikert	Union	Susquehanna.
Wellsboro	Tioga	West Branch Susquehanna.
West Chester	Chester	Delaware.
White Haven	Luzerne	Lehigh.
Wilkes-Barre	Luzerne	North Branch Susquehanna.
Williamsport	Lycoming	West Branch Susquehanna.

Station	County	Drainage Basin
York	York	Susquehanna.
York Haven	York	Susquehanna.
Port Jervis, N. Y.	Orange	Delaware.
Trenton, N. J.	Mercer	Delaware.

OHIO DRAINAGE

Beaver Dam	Beaver	Ohio.
Beaver Falls	Beaver	Beaver.
Bradford	McKean	Allegheny.
Bradys Bend	Armstrong	Allegheny.
Brookville	Jefferson	Allegheny.
Clarion	Clarion	Allegheny.
Claysville	Washington	Ohio.
Cloe	Jefferson	Allegheny.
Clymer	Indiana	Kiskiminitas.
Confluence	Somerset	Youghiogheny.
Coraopolis	Allegheny	Ohio.
Corry	Erie	Allegheny.
Creekside	Indiana	Allegheny.
Davis Island Dam	Allegheny	Ohio.
Derry	Westmoreland	Kiskiminitas.
Ebensburg	Cambria	Kiskiminitas.
Edinboro	Erie	Allegheny.
Elk Lick	Somerset	Youghiogheny.
Falls Creek	Clearfield	Allegheny.
Franklin	Venango	Allegheny.
Freeport	Armstrong	Allegheny.
Greensburg	Westmoreland	Youghiogheny.
Greenville	Mercer	Beaver.
Grove City	Mercer	Beaver.
Herrs Island Dam	Allegheny	Allegheny.
Indiana	Indiana	Kiskiminitas.
Irwin	Westmoreland	Youghiogheny.
Johnstown	Cambria	Kiskiminitas.
Ketner	Elk	Allegheny.
Linesville	Crawford	Beaver.
Lock No. 4	Washington	Monongahela.
Lycippus	Westmoreland	Kiskiminitas.
New Castle	Lawrence	Beaver.
Newell	Fayette	Monongahela.
North Shenango	Crawford	Beaver.
Parkers Landing	Armstrong	Allegheny.
Pennline	Crawford	Beaver.
Pittsburgh	Allegheny	Ohio.
Ridgway	Elk	Allegheny.
Saegertown	Crawford	Allegheny.
Saltsburg	Indiana	Kiskiminitas.
Sharon	Mercer	Beaver.
Somerset	Somerset	Youghiogheny.
Springdale	Allegheny	Allegheny.
Summit	Crawford	Beaver.
Tionesta	Forest	Allegheny.

Station	County	Drainage Basin
Turnerville	Crawford	Beaver.
Uniontown	Fayette	Monongahela.
Unity Reservoir	Westmoreland	Youghiogheny.
Vandergrift	Westmoreland	Kiskiminitas.
Warren	Warren	Allegheny.
Washington	Washington	Ohio.
Waynesburg	Greene	Monongahela.
Westford	Crawford	Beaver.
West Newton	Westmoreland	Youghiogheny.

LAKE DRAINAGE

Erie	Erie	Lake Erie.
West Bingham	Potter	Genesee.

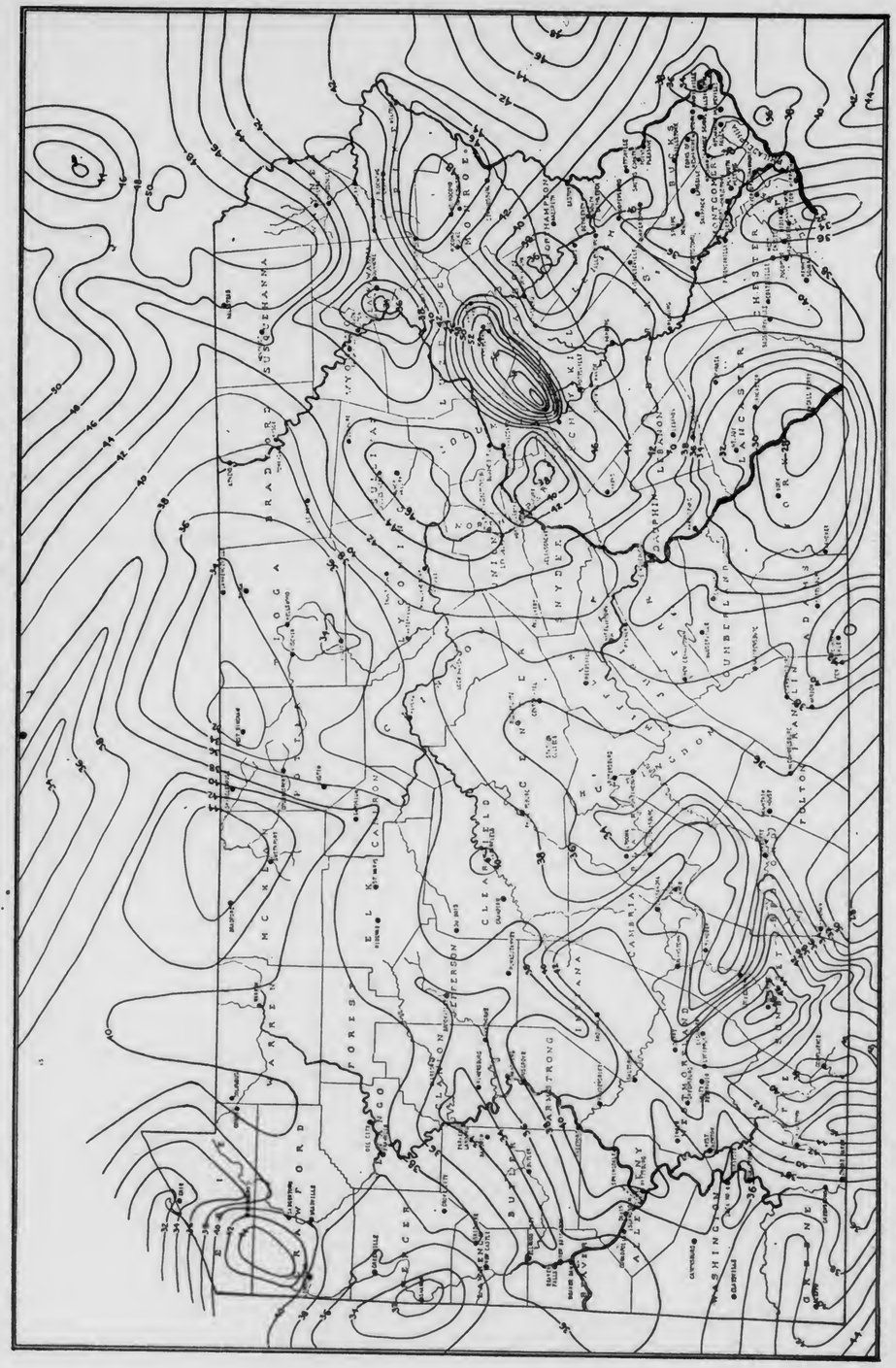
The mean precipitation for the year ending September 30, 1922, as computed from records of the United States Weather Bureau and Water Supply Commission, was 42.02 inches, or 3.11 inches below normal.

There was a deficiency in precipitation, in amounts varying from 0.5 inch to 1.8 inches, during nine months of the year. In October, when the replenishing period usually begins, the rainfall was 1.2 inches below the normal for that month, while in June, during the growing season, there was an excess of 0.9 inch.

During the month of November the precipitation was 3.2 inches above the normal for that month and there was an excess of 0.8 inch in March and 0.9 inch in June which compensated over 60 per cent of the deficiency for other months.

The precipitation map on page 18, showing two inch isohyetals for the year ending September 30, 1922, was drawn from all precipitation known to be observed in Pennsylvania, including that of private interests not published by the United States Weather Bureau. For drainage areas in adjacent states, tributary to Pennsylvania streams, the Weather Bureau records were used.

The yearly precipitation, over drainage areas tributary to gaging stations, used in calculating the per cent run-off to precipitation, was computed from the following map.



DEPARTMENT OF FORESTS AND WATERS
WATER RESOURCES SERVICE
Map Showing Precipitation for the Year Ending September 30, 1922

PLATE I

STREAM FLOW RECORDS

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in depth of inches, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, and run-off in inches. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second". A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the tables of convenient equivalents, page 20.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off (depth in inches)" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

The following terms not in common use are here defined:

"Stage-discharge relation", an abbreviation for the term "relation of gage height to discharge".

"Control", a term used to designate the section or sections of the stream below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same at all stages.

The "point of zero flow" for a gaging station is that point on the gage—the gage height—to which the surface of the river falls when the discharge is reduced to zero.

CONVENIENT EQUIVALENTS

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area

Discharge (second-feet per square mile)	Run-off (depth in inches)				
	1 day	28 days	29 days	30 days	31 days
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.223
9	.33471	9.372	9.707	10.041	10.376

Note—For part of a month multiply the run-off for 1 day by the number of days.

Table for converting discharge in second-feet into run-off in millions of cubic-feet.

Discharge (second-feet)	Run-off (millions of cubic feet)				
	1 day	28 days	29 days	30 days	31 days
1	0.0864	2.419	2.506	2.592	2.678
2	.1728	4.838	5.012	5.184	5.356
3	.2592	7.257	7.518	7.776	8.034
4	.3456	9.676	10.02	10.37	10.71
5	.4320	12.10	12.53	12.96	13.39
6	.5184	14.51	15.04	15.55	16.07
7	.6048	16.93	17.54	18.14	18.75
8	.6912	19.35	20.05	20.74	21.42
9	.7776	21.77	22.55	23.33	24.10

Note:—For part of a month multiply the run-off for one day by the number of days.

Table for converting discharge in second-feet into run-off in millions of gallons.

Discharge (second-feet)	Run-off (millions of gallons)				
	1 day	28 days	29 days	30 days	31 days
1	0.6463	18.10	18.74	19.39	20.04
2	1.293	36.20	37.48	38.78	40.08
3	1.939	54.30	56.22	58.17	60.12
4	2.585	72.40	74.96	77.56	89.16
5	3.232	90.50	93.70	96.95	100.2
6	3.878	108.6	112.4	116.3	120.2
7	4.524	126.7	131.2	135.7	140.3
8	5.170	144.8	149.9	155.1	160.3
9	5.817	162.9	168.7	174.5	180.4

Note:—For part of a month multiply the run-off for one day by the number of days.

Table for converting velocity in feet per second into velocity in miles per hour:

(1 foot per second=0.681818 mile per hour, or very nearly two-thirds mile per hour; 1 mile per hour=1.4666 feet per second. In computing the table the values 0.68182 and 1.4667 were used.)

Feet per second (units)	Miles per hour for tenths of foot per second									
	0	1	2	3	4	5	6	7	8	9
0	0.000	0.068	0.136	0.205	0.273	0.341	0.409	0.477	0.545	0.614
1	.682	.750	.818	.886	.995	1.02	1.09	1.16	1.23	1.30
2	1.36	1.43	1.50	1.57	1.64	1.70	1.77	1.84	1.91	1.98
3	2.05	2.11	2.18	2.25	2.32	2.39	2.45	2.52	2.59	2.66
4	2.73	2.80	2.86	2.93	3.00	3.07	3.14	3.20	3.27	3.34
5	3.41	3.48	3.55	3.61	3.68	3.75	3.82	3.89	3.95	4.02
6	4.09	4.16	4.23	4.30	4.36	4.43	4.50	4.57	4.64	4.70
7	4.77	4.84	4.91	4.98	5.05	5.11	5.18	5.25	5.32	5.39
8	5.45	5.52	5.59	5.66	5.73	5.80	5.86	5.93	6.00	6.07
9	6.14	6.20	6.27	6.34	6.41	6.48	6.55	6.61	6.68	6.75

1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.
1 second-foot for one year (365 days) covers 1 square mile 1.131 feet or 13.572 inches deep.
1 second-foot for one year (365 days) equals 31,536,000 cubic feet.
1 second-foot for one day equals 86,400 cubic feet.
1,000,000,000 (1 United States Billion) cubic feet equals 11,570 second-feet for one day.
1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.
1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.
1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.
1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.
100 United States gallons per minute equals 0.223 second-foot.
1,000,000 United States gallons per day equals 1.55 second-feet.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0.0737 second-foot per year.
1 foot equals 0.3048 meter.
1 mile equals 1.60935 kilometers.
1 mile equals 5,280 feet.
1 square mile equals 2.59 square kilometers.
1 cubic foot equals 0.0283 cubic meter.
1 cubic foot of water weighs 62.5 pounds.
1 cubic meter per minute equals 0.5886 second foot.
1 horsepower equals 550 foot-pounds per second.
1 horsepower equals 76.0 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1⅓ horsepower equals about 1 kilowatt.

To calculate water power quickly: $\frac{\text{Sec. ft. x fall in feet}}{11}$ =net horsepower on water wheel realizing 80 per cent. of theoretical power.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1921, and ending September 30, 1922. At the first of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice or in ponds, lakes, and swamps, and this stored water passes off in the streams during the spring break-up; at the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for a year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consists of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct reading on a chain or staff gage. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage heights to these rating tables gives the daily discharge from which the monthly and yearly mean discharge are computed.

The data presented for each gaging station comprises a description of the station, a table giving results of discharge measurements, a table showing daily gage height, a table showing the daily discharge, and a table of monthly and yearly discharge and run-off

Where the base data are insufficient to determine the daily discharge, tables giving daily gage heights and results of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, shifting of control, and the cause and effect of backwater. It gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage heights may not be the true mean discharge for the day.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than that given in the maximum column. Likewise, in the column headed "Minimum", the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow computations recorded in the remaining columns are based.

ACCURACY OF FIELD DATA AND COMPUTED RECORDS

The accuracy of stream-flow data depends primarily (1) on the permanence of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

A paragraph in the description of the station gives information regarding (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage reading, (4) frequency of gage readings, and (5) methods of applying daily gage height to the rating table to obtain the daily discharge.

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined" within 10 per cent; "poorly defined" within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and depth of run-off in inches may be subject to some error caused by the inclusion of non-contributing districts in the measured drainage area, or by inability to interpret the effect of artificial regulation of the flow of the river above the station.

The table of monthly discharge gives only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeeding year may be expected to throw new light on data previously published.

The Commonwealth of Pennsylvania is divided into three main drainage basins; the Delaware, Susquehanna and Ohio. The hydrographic data in the following pages are divided into three groups, corresponding to these three basins. The stations in each basin are shown in the following tables and their location is indicated on the map (Plate II) with reference number corresponding to those given in the tables.

TABLE NO. VII

Gaging Stations in Delaware Basin*

Station No.	Stream	Location
1	Lackawaxen River	West Hawley
2	Wallenpaupack Creek	Wilsonville
3	Shohola Creek	Shohola
4	Delaware River	Port Jervis, N. Y.
5	Bushkill Creek	Shoemakers
6	McMichaels Creek	Stroudsburg
7	Lehigh River	Tannery
8	Little Lehigh Creek	Allentown
9	Lehigh River	Bethlehem
10	Delaware River	Riegelsville
11	Little Schuylkill River	Tamaqua
12	Schuylkill River	Reading
13	Perkiomen Creek	Graters Ford
14	Schuylkill River	Conshohocken
15	Brandywine Creek	Chadds Ford

*For information available on each station, see description of station.

TABLE NO. VIII

Gaging Stations in Susquehanna Basin*

Station No.	Stream	Location
1	North Branch Susquehanna River	Binghamton, N. Y.
2	North Branch Susquehanaa River	Vestal, N. Y.
3	Chemung River	Corning, N. Y.
4	North Branch Susquehanna River	Towanda
5	Towanda Creek	Monroeton
6	Tunkhannock Creek	Dixon
7	Lackawanna River	Moosic
8	North Branch Susquehanna River	Wilkes-Barre
9	Wapwallopen Creek	Wapwallopen
10	Nescopeck Creek	St. Johns
11	Fishing Creek	Bloomsburg
12	North Branch Susquehanna River	Danville
13	West Branch Susquehanna River	Bower
14	West Branch Susquehanna River	Clearfield
15	Clearfield Creek	Dimeling
16	Driftwood Branch Sinnemahoning Creek	Sterling Run
17	Driftwood Branch Sinnemahoning Creek	Driftwood
18	West Branch Susquehanna River	Renovo
19	West Branch Susquehanna River	Lock Haven
20	Bald Eagle Creek	Milesburg
21	Bald Eagle Creek	Beech Creek Station
22	Pine Creek	Cedar Run
23	West Branch Susquehanna River	Jersey Shore
24	Lycoming Creek	Trout Run
25	West Branch Susquehanna River	Williamsport
26	West Branch Susquehanna River	Lewisburg
27	Susquehanna River	Sunbury
28	Frankstown Branch Juniata River	Williamsburg
29	Little Juniata River	Tyrone
30	Frankstown Branch Juniata River	Huntingdon
31	Raystown Branch Juniata River	Saxton
32	Tuscarora Creek	Port Royal
33	Juniata River	Newport
34	Susquehanna River	Harrisburg
35	Little Swatara Creek	Pine Grove
36	Swatara Creek	Harpers
37	Codorus Creek	York

*For information available on each station, see description of station.

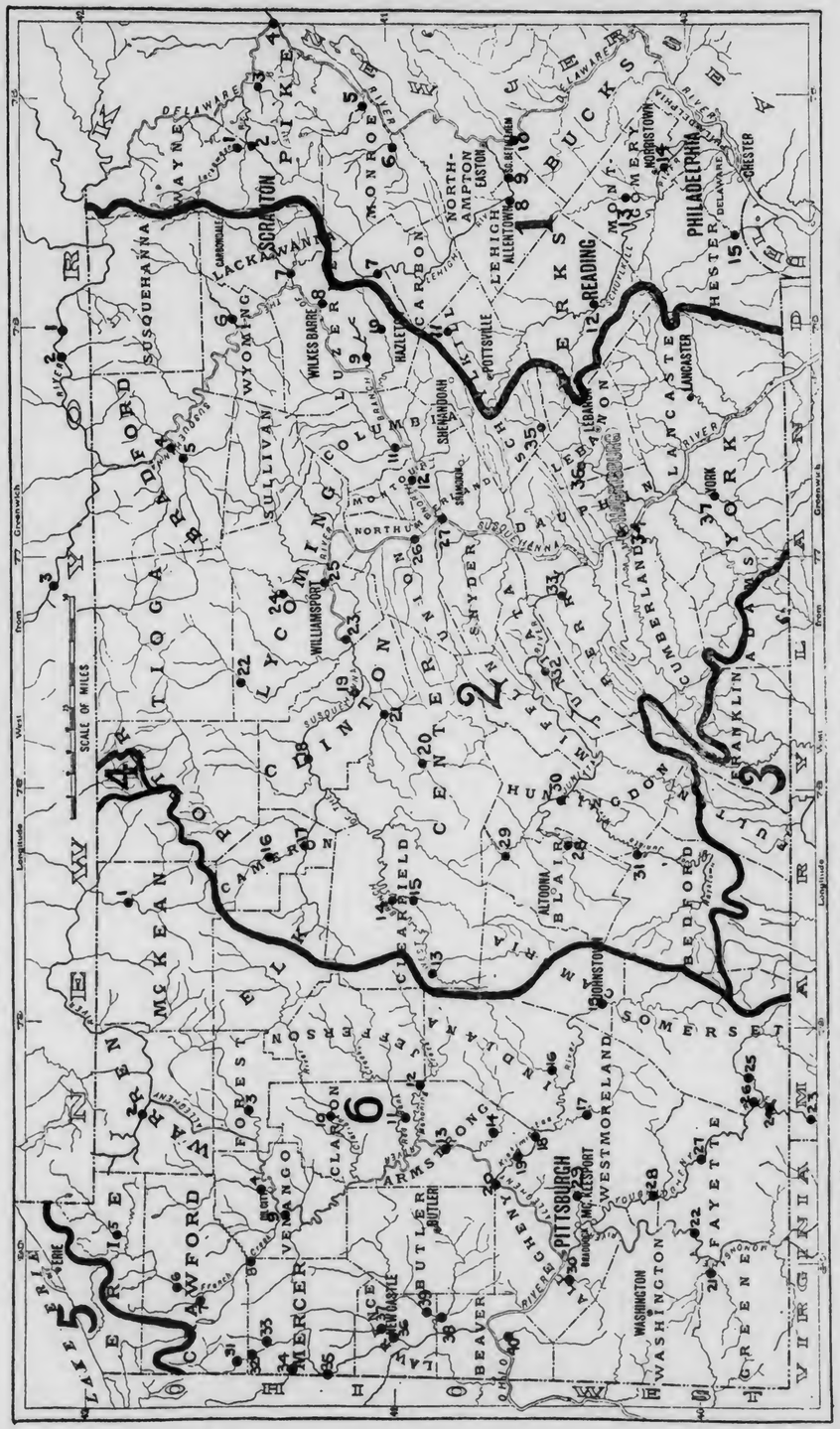
TABLE NO. IX

Gaging Stations in Ohio Basin*

Station No.	Stream	Location
1	Allegheny River	Larabee
2	Brokenstraw Creek	Youngsville
3	Tionesta Creek	Butler Bridge
4	Oil Creek	Rouseville
5	French Creek	Kimmeytown
6	French Creek	Saegertown
7	Cussewago Creek	Meadville
8	French Creek	Carlton
9	Allegheny River	Franklin
10	Clarion River	Clarion
11	Red Bank Creek	Saint Charles
12	Mahoning Creek	Dayton
13	Allegheny River	Kittanning
14	Crooked Creek	Hileman'sFarm
15	Stony Creek	Johnstown
16	Blacklick Creek	Blacklick
17	Loyalhanna Creek	New Alexandria
18	Kiskiminitas River	Avonmore
19	Kiskiminitas River	Vandergrift
20	Allegheny River	Freeport
21	South Fork Ten Mile Creek	Pollock's Mill
22	Monongahela River	South Brownsville
23	Youghiogheny River	Friendsville, Md.
24	Youghiogheny River	Confluence
25	Casselman River	Markleton
26	Laurel Hill Creek	Ursina
27	Youghiogheny River	Connellsville
28	Youghiogheny River	Sutersville
29	Turtle Creek	Trafford
30	Chartiers Creek	Carnegie
31	Shenango River	Turnerville
32	Shenango River	Jamestown
33	Little Shenango River	Greenville
34	Pymatuning Creek	Orangeville
35	Shenango River	Sharon
36	Shenango River	New Castle
37	Neshannock Creek	Eastbrook Station
38	Connoquenessing Creek	Hazen
39	Slippery Rock Creek	Wurtemburg
40	Raccoon Creek	Moffatt's Mill

*For information available on each station, see description of station.

DEPARTMENT OF FORESTS AND WATERS
WATER RESOURCES SERVICE
Map Showing Location of Gaging Stations for the Year Ending September 30, 1922



Legend.—Drainage Basins—(1) Delaware, (2) Susquehanna, (3) Potomac, (4) Genesee, (5) Erie, (6) Ohio.
PLATE II

GAGING STATION RECORDS

DELAWARE BASIN

LACKAWAXEN RIVER NEAR WEST HAWLEY

Location.—At single-span steel highway bridge, known as Riverside Bridge, West Hawley, Wayne County, about one-half mile upstream from the mouth of Middle Creek.

Drainage Area.—212 square miles.

Records Available.—May 19, 1921, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by J. S. Pennell.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Section is walled in below the bridge. Banks are of medium height and subject to overflow at extremely high stages. Bed is composed of gravel. Control is at a riffle about 50 feet below the gage where the bed is composed of coarse gravel.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 9.3 feet at midnight November 28-29; minimum, 1.06 feet at 4.30 p. m. October 1 and 7 a. m. October 3.

Ice.—Stage-discharge relation usually affected by ice.

Discharge measurements of Lackawaxen River near West Hawley, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
4	July 8	H. L. Landis	2.08	305
5	Aug. 23	H. J. McIntyre	1.19	47.5

Daily Mean Gage Height, in feet, of Lackawaxen River near West Hawley, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.09	1.33	3.90	2.20	1.79	1.96	3.31	1.65	1.55	2.75	1.50	1.50
2	1.10	1.63	3.50	1.71	1.86	1.98	3.18	1.59	1.52	4.09	1.75	1.49
3	1.22	1.65	5.07	1.68	2.66	2.01	3.40	1.52	2.28	4.57	1.89	1.42
4	1.40	1.48	3.80	1.70	2.42	1.88	3.68	1.72	5.25	3.27	1.90	1.54
5	1.35	1.37	3.20	2.19	2.46	1.96	3.65	3.01	3.52	2.77	1.69	1.55
6	1.24	1.35	2.90	3.07	2.35	1.90	3.62	2.66	3.09	2.50	1.52	1.50
7	1.32	1.42	2.52	2.36	2.29	2.73	3.62	2.36	2.79	2.26	1.52	1.48
8	1.29	1.36	2.45	-------	2.19	5.10	3.36	2.31	2.29	2.06	1.77	1.43
9	1.42	1.35	2.22	1.95	2.20	3.62	3.14	2.10	2.15	2.14	1.71	1.42
10	1.48	1.41	2.17	1.95	2.14	3.26	2.96	1.99	2.01	1.99	1.46	1.26
11	1.42	1.44	2.10	1.89	2.17	3.48	-------	1.86	2.05	1.90	1.44	1.29
12	1.67	1.50	2.07	1.84	2.14	3.48	4.70	1.79	2.41	1.82	-------	1.34
13	1.68	1.56	2.02	2.06	2.08	3.24	3.46	1.72	2.01	1.74	1.40	1.45
14	1.57	1.56	1.86	1.84	1.89	3.95	3.01	1.62	1.83	1.68	1.35	1.33
15	1.51	1.73	1.70	1.76	1.88	4.12	4.83	1.71	1.72	1.55	1.34	1.37
16	1.46	1.79	1.64	1.85	2.08	3.35	3.92	1.61	1.65	1.48	1.37	1.27
17	1.43	1.71	1.66	1.80	1.91	2.86	3.35	1.53	2.00	1.54	1.31	1.24
18	1.44	1.99	2.00	1.80	2.00	2.53	3.30	1.58	6.75	1.59	1.32	1.23
19	1.35	1.92	2.12	1.76	2.06	2.34	3.02	2.24	3.95	1.52	1.36	1.23
20	1.57	2.44	1.84	1.90	2.41	3.67	2.77	2.37	3.11	1.57	1.51	1.16
21	1.83	2.33	1.77	1.94	3.10	3.79	2.51	1.99	2.83	1.50	1.41	1.30
22	1.62	2.11	1.61	1.92	2.99	2.99	2.32	1.87	2.99	1.43	1.41	1.45
23	1.46	1.95	1.80	1.88	4.25	2.62	2.20	1.75	2.74	1.40	1.28	1.49
24	1.48	1.90	1.83	1.86	4.66	2.61	2.15	1.71	2.38	1.77	1.32	1.44
25	1.42	2.23	1.86	1.83	3.26	2.80	2.05	-------	2.10	1.66	1.34	1.48
26	1.38	2.15	2.00	1.78	3.52	3.00	-------	1.84	2.08	1.58	1.61	1.43
27	1.38	2.77	1.85	1.86	2.46	3.32	1.85	1.71	1.97	1.53	1.68	1.38
28	1.34	7.44	1.85	1.89	2.33	4.38	1.81	1.64	1.99	1.56	1.58	1.40
29	1.44	7.88	1.85	-------	-------	4.18	1.75	1.53	2.64	1.54	1.50	1.42
30	-------	5.12	2.09	1.88	-------	3.35	1.71	1.51	2.49	1.46	1.47	1.43
31	1.28	-------	2.13	1.95	-------	3.13	-------	1.50	-------	1.36	1.37	-------

Note.—Gage height Oct. 30, Jan. 8, 29, Apr. 11, 26, May 25 and Aug. 12 not observed. Stage-discharge relation Dec. 29 to Feb. 23 affected by ice.

DELAWARE BASIN—STATION NO. 2

WALLENPAUPACK CREEK AT WILSONVILLE

Location.—At two-span steel highway bridge, about one and a half miles south of Hawley, at Wilsonville, Wayne County.

Drainage Area.—227 square miles.

Records Available.—July 3, 1908, to September 30, 1922.

Gages.—Vertical staff attached to downstream end of pier and a Barrett and Lawrence water-stage recorder installed on top downstream end of pier. Zero elevation of gages, 1,146.78 feet, United State Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank overflows at extremely high stages; left is high and not subject to overflow. Bed is composed of rock. Control is a log weir, about 70 feet below gage, which was damaged by ice in January 1921 and repaired in September 1921.

Extremes of Discharge.—Maximum stage during the year, from water-stage recorder, 4.5 feet at 2 a. m. March 9 (discharge, 4,400 second-feet); minimum, 0.58 foot a 6 p. m. October 2 (discharge, 27 second-feet).

Ice.—Stage-discharge relation not usually affected by ice.

Regulation.—Flow during low stages regulated, for the operation of silk mills, by use of flashboards on a three-foot concrete dam about 35 feet above gage.

Cooperation.—Records furnished by L. B. Stillwell and H. S. Putnam, Consulting Engineers, New York City.

Discharge measurements of Wallenpaupack Creek at Wilsonville, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.ft.
31	July 8	H. J. McIntyre	1.59	558
32	Aug. 23	Do	.68	57.6

Daily Mean Gage Height, in feet, of Wallenpaupack Creek at Wilsonville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.60	1.05	3.20	1.10	1.00	2.20	1.96	0.94	0.88	1.06	0.87	0.72
2	.58	1.21	2.66	1.10	1.10	2.00	2.00	.87	.88	1.16	.84	.72
3	.62	1.22	2.64	1.05	1.30	1.90	1.99	.83	1.20	1.31	.84	.72
4	.66	1.14	2.78	1.10	1.50	1.80	1.96	.82	1.65	1.66	.98	.72
5	.68	.98	2.72	1.15	1.40	1.70	2.02	.92	1.80	2.07	1.20	.73
6	.69	.84	2.44	1.20	1.40	1.60	2.03	1.34	1.84	2.00	1.09	.73
7	.68	.85	2.16	1.10	1.40	1.86	1.96	1.70	1.80	1.78	.96	.72
8	.66	.80	1.93	1.00	1.35	3.80	1.89	1.56	1.78	1.49	.92	.72
9	.70	.80	1.73	1.00	1.30	4.05	1.85	1.39	1.74	1.30	.92	.73
10	.72	.78	1.57	.90	1.30	3.10	1.79	1.24	1.70	1.19	.88	.83
11	.72	.78	1.48	1.00	1.25	2.58	1.72	1.18	1.72	1.15	.86	.93
12	.70	.80	1.37	1.15	1.25	2.45	1.75	1.13	1.76	1.14	.84	1.14
13	.72	.84	1.32	1.20	1.20	2.36	1.86	1.07	1.61	1.14	.84	1.14
14	.72	.84	1.22	1.30	1.30	2.39	1.88	1.03	1.44	1.14	.80	.97
15	.68	.84	1.11	1.20	1.30	2.44	2.37	1.01	1.32	1.14	.78	.85
16	.64	.84	1.10	1.10	1.30	2.35	2.94	1.01	1.26	1.12	.76	.78
17	.70	.81	1.00	1.00	1.30	2.10	2.51	1.02	1.26	1.10	.74	.74
18	.70	.80	1.10	.95	1.30	1.90	2.30	1.29	1.74	1.09	.72	.72
19	.70	.84	1.25	.90	1.30	1.77	2.12	1.56	2.70	1.08	.70	.68
20	.68	.95	1.45	.90	1.35	1.73	1.90	1.78	2.45	1.05	.66	.69
21	.78	1.21	1.40	.85	1 40	2.03	1.80	1.74	2.12	1.02	.66	.68
22	.84	1.18	1.40	.90	1.40	1.98	1.62	1.55	1.94	1.02	.65	.68
23	.83	1.08	1.30	1.00	1.45	1.80	1.48	1.34	1.80	1.00	.64	.66
24	.80	1.00	1.28	.95	1.80	1.70	1.35	1.20	1.62	.94	.65	.66
25	.77	1.00	1.30	.90	1.95	1.62	1.26	1.13	1.35	.88	.64	.66
26	.75	1.00	1.35	.88	2.50	1.63	1.20	1.15	1.21	.83	.65	.66
27	.74	1.02	1.40	.85	2.45	1.68	1.14	1.05	1.13	.82	.86	.66
28	.72	1.80	1.35	.85	2.30	1.83	1.05	.99	1.12	.81	.88	.66
29	.66	2.82	1.32	.85	-------	2.08	1.02	.98	1.08	.80	.78	.66
30	.62	3.44	1.27	.90	-------	2.10	.98	.96	1.07	.81	.78	.65
31	.76	-------	1.20	.90	-------	2.00	-------	.92	-------	.87	.76	-------

Daily discharge, in second-feet, of Wallenpaupack Creek at Wilsonville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	196	2,206	219	172	1,070	844	146	122	199	118	66
2	28	277	1,557	219	219	880	890	119	122	250	108	66
3	38	282	1,529	194	330	790	871	104	276	336	107	68
4	50	242	1,686	219	464	700	844	100	580	589	165	68
5	55	163	1,616	244	392	620	898	139	701	945	271	70
6	57	109	1,316	271	392	540	907	360	736	880	214	70
7	55	111	1,025	219	392	761	844	620	700	686	155	66
8	49	94	817	172	360	3,168	781	510	694	456	138	66
9	61	94	644	172	330	3,535	745	386	652	330	138	70
10	66	80	517	130	330	2,078	693	294	624	266	124	165
11	65	88	446	172	300	1,464	636	260	636	244	114	142
12	60	92	372	244	300	1,330	660	234	668	239	109	237
13	65	109	329	271	271	1,233	754	204	548	239	106	243
14	67	109	283	330	330	1,264	772	184	421	239	93	159
15	56	107	224	271	330	1,319	1,252	176	345	239	85	111
16	42	109	219	219	330	1,222	1,877	176	309	227	77	89
17	62	97	172	172	330	973	1,389	178	306	221	72	74
18	60	92	219	150	330	790	1,171	324	670	214	64	67
19	61	109	300	130	360	676	991	511	1,590	207	60	55
20	56	151	428	130	360	644	790	684	1,326	194	49	58
21	85	277	392	111	392	907	702	652	992	180	48	55
22	107	258	392	130	392	862	556	502	826	180	46	53
23	104	206	330	172	428	762	450	355	702	172	44	48
24	93	174	318	150	700	620	360	271	556	146	46	47
25	83	171	330	130	835	556	306	234	363	122	44	49
26	76	170	360	120	1,380	564	272	244	277	104	47	49
27	73	183	392	111	1,330	604	239	195	234	100	116	48
28	68	707	360	111	1,170	728	194	167	229	97	121	49
29	49	2,000	342	111	-------	955	180	163	207	94	84	47
30	37	2,531	312	130	-------	970	163	152	204	97	86	46
31	80	-------	271	130	-------	880	-------	138	-------	118	81	-------

Note.—Discharge Nov. 29 affected by failure of flashboards on dam above gage.

Monthly discharge of Wallenpaupack Creek at Wilsonville, for the year ending Sept. 30, 1922

(Drainage area 227 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	107	28	62.7	0.276	0.32
November	2,531	86	313	1.38	1.54
December	2,206	172	636	2.80	3.23
January	330	111	179	.789	.91
February	1,380	172	472	2.08	2.17
March	3,535	540	1,080	4.76	5.49
April	1,877	163	734	3.23	3.60
May	684	100	283	1.25	1.44
June	1,590	122	554	2.44	2.72
July	945	94	278	1.22	1.41
August	271	44	101	.445	.51
September	243	46	81.4	.359	.40
The Year	3,535	28	397	1.75	23.74

DELAWARE BASIN—STATION NO. 3

SHOHOLA CREEK NEAR SHOHOLA

Location.—At single-span steel highway bridge about one and three-quarter miles south of Shohola, Pike County.

Drainage Area.—82 square miles.

Records Available.—February 19, 1919, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to tenths once daily by Walter P. Hess.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is of medium height and overflows during extremely high stages. Bed is composed of coarse gravel and large stones. Control is at the first of a series of riffles about 150 feet downstream from gage; probably permanent.

Extremes of Stage.—Maximum gage height during the year, 4.1 feet observed on February 27; minimum, 0.9 foot from October 1 to 4.

Ice.—Stage-discharge relation probably affected by ice.

Cooperation.—Records furnished by Gannett, Seelye & Fleming, Inc., Engineers, Harrisburg, Pa.

The following discharge measurement was made by H. L. Landis: No. 5. July 8: Gage height, 2.20 feet; discharge, 163 second-feet.

Daily Mean Gage Height, in feet, of Shohola Creek near Shohola, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.9	1.2	2.9	2.0	2.6	3.9	3.0	2.0	2.0	2.1	1.5	1.4
2	.9	1.3	2.9	2.0	2.8	4.0	3.0	2.0	2.0	2.6	1.4	1.4
3	.9	1.4	2.6	2.0	3.2	4.0	3.0	2.0	2.0	2.6	1.4	1.4
4	.9	1.3	2.5	2.0	3.2	4.0	3.1	2.0	2.3	2.9	1.4	1.3
5	1.0	1.3	2.5	2.1	3.2	3.7	3.1	2.0	2.7	2.9	1.5	1.3
6	1.0	1.2	2.4	2.1	3.4	3.7	2.8	2.6	2.9	3.0	1.6	1.3
7	1.0	1.1	2.3	2.1	3.1	3.9	2.8	2.6	3.3	2.9	1.6	1.2
8	1.0	1.1	2.2	2.2	3.1	4.0	2.8	2.9	3.3	2.4	1.6	1.3
9	1.1	1.1	2.2	2.2	3.0	4.0	2.7	2.7	3.3	2.3	1.5	1.3
10	1.1	1.1	2.2	2.0	3.0	3.7	2.7	2.6	2.9	2.3	1.4	1.3
11	1.1	1.1	1.9	2.0	2.9	3.3	2.7	2.6	2.8	2.2	1.4	1.3
12	1.2	1.2	1.9	2.1	2.9	3.3	2.7	2.3	2.5	2.1	1.4	1.3
13	1.2	1.2	1.9	2.1	2.9	3.3	2.8	2.3	2.5	2.1	1.3	1.5
14	1.2	1.5	1.8	2.2	2.9	3.3	2.8	2.2	2.4	1.9	1.4	1.6
15	1.2	1.3	1.8	2.3	2.7	3.3	2.7	2.2	2.4	1.9	1.4	1.6
16	1.2	1.2	1.7	2.3	2.6	3.2	2.9	2.1	2.2	1.8	1.3	1.5
17	1.1	1.2	1.7	2.2	2.5	2.9	2.9	2.0	2.1	1.7	1.2	1.4
18	1.1	1.3	2.1	2.3	2.5	2.7	2.9	2.1	3.9	1.7	1.2	1.4
19	1.1	1.3	1.9	2.3	2.7	2.7	2.8	2.7	3.6	1.6	1.2	1.4
20	1.2	1.6	1.9	2.3	3.0	2.8	2.7	3.1	3.4	2.0	1.1	1.3
21	1.4	1.6	1.9	2.3	3.5	2.8	2.6	2.9	3.3	2.0	1.1	1.3
22	1.4	1.6	1.8	2.3	3.2	3.0	2.6	2.7	3.3	2.0	1.1	1.2
23	1.2	1.6	1.9	2.2	3.5	3.0	2.4	2.6	2.8	1.6	1.1	1.2
24	1.2	1.5	1.9	2.2	4.0	2.6	2.4	2.6	2.8	1.7	1.1	1.2
25	1.2	1.6	2.0	2.2	4.0	2.6	2.5	2.5	2.4	1.7	1.2	1.1
26	1.2	1.5	1.9	2.1	4.0	2.6	2.4	2.5	2.3	1.6	1.4	1.1
27	1.1	1.8	1.9	2.2	4.1	2.5	2.3	2.4	2.2	1.6	1.4	1.1
28	1.1	2.4	2.1	2.2	4.0	2.6	2.3	2.2	2.2	1.6	1.4	1.1
29	1.1	2.9	2.1	2.7	-------	2.9	2.1	2.2	2.2	1.5	1.3	1.1
30	1.1	2.9	2.0	2.6	-------	2.9	2.0	2.1	2.1	1.5	1.4	1.1
31	1.1	-------	1.8	2.6	-------	2.9	-------	2.1	-------	1.5	1.4	-------

3rr

DELAWARE BASIN—STATION NO. 4

DELAWARE RIVER AT PORT JERVIS, N. Y.

Location.—At two-span steel highway bridge between Matamoras, Pa., and Port Jervis, Orange County, N. Y., one mile above Neversink River and six miles below Mongaup River.

Drainage Area.—3,070 square miles.

Records Available.—October 12, 1904, to September 30, 1922.

Gage.—Staff in two sections; upper section vertical and attached to downstream end of left abutment; lower section inclined, about 30 feet downstream from upper section. Prior to June 20, 1914, a standard chain gage, attached to the downstream side of bridge, was used. On March 14, 1920, the facing board of the inclined section was carried out; since that date the chain gage on the bridge has been used. Elevation of gage zero 414.89 feet, United States Geological Survey datum. Gage read by John Bisland.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and do not overflow. Bed is composed of gravel; occasionally shifting.

Extremes of Discharge.—Maximum stage recorded during the year, 13.1 feet at 5 p. m. November 29 (discharge, 68,100 second-feet); minimum, 1.6 feet several times in October and September (discharge, 780 second-feet).

1904-1922: Maximum stage recorded, 16.0 feet at 8 a. m. March 28, 1914 (discharge, 92,700 second-feet); minimum, 0.60 foot at 8 a. m. September 22 and 23, 1908 (discharge, 175 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation practically permanent except when affected by ice. Rating curve fairly well defined below 2,500 second-feet and well defined between 2,500 and 30,000 second-feet. Gage read to tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Open-water records good except those for low and high stages and for periods when stage-discharge relation was affected by ice, which are fair.

Cooperation.—Record furnished by United States Geological Survey Office, Albany, N. Y.

Discharge measurements of Delaware River at Port Jervis, N. Y., during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
80	Feb. 9	B. F. Howe	2.90	2,880
81	Aug. 6	do	2.76	2,510

Daily Mean Gage Height, in feet, of Delaware River at Port Jervis, N. Y., for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	2.0	7.6	2.45	4.1	4,0	6.3	3.1	2.7	4.5	2.35	2.5
2	1.6	2.5	7.3	2.25	4.1	3.7	6.2	3.0	2.6	5.6	2.65	2.6
3	1.6	3.2	7.6	2.45	4.2	3.6	5.8	2.9	3.1	5.8	2.9	2.4
4	1.7	3.0	7.6	2.9	4.7	3.6	6.2	2.8	8.6	5.6	3.0	2.4
5	1.95	2.8	6.4	2.9	4.2	3.4	6.2	3.6	6.6	5.0	3.0	2.55
6	2.3	2.7	5.6	4.0	3.4	3.3	6.0	4.7	6.2	4.6	2.85	2.7
7	2.15	2.6	5.0	4.0	3.2	4.4	5.8	4.5	5.8	4.0	2.5	2.6
8	2.0	2.5	4.8	3.3	3.0	11.2	5.4	4.2	5.6	3.8	2.45	2.7
9	2.0	2.4	4.4	3.0	2.95	8.5	5.5	4.0	5.2	3.5	2.65	2.5
10	1.9	2.4	4.2	2.9	2.8	7.0	5.6	3.7	4.6	3.3	2.4	2.5
11	2.05	2.45	4.0	2.75	2.8	6.2	5.7	3.5	4.1	3.1	2.3	2.4
12	2.2	2.6	3.8	2.35	2.7	6.0	7.1	3.4	4.2	2.95	2.2	2.4
13	2.55	2.6	3.7	2.4	2.7	6.2	6.9	3.4	5.1	2.8	2.2	2.45
14	2.7	2.6	3.5	2.35	2.7	6.4	6.6	3.3	4.3	2.7	2.2	2.6
15	2.6	2.65	3.4	2.4	2.7	6.9	6.4	3.2	4.0	2.6	2.1	2.45
16	2.5	2.85	2.85	2.65	2.6	6.4	6.8	3.0	3.6	2.5	2.0	2.3
17	2.4	3.2	2,6	2.65	2.7	5.8	6.4	2.9	3.6	2.5	1.9	2.2
18	2.3	3.4	3.6	2.6	4.0	5.2	6.2	2.85	7.7	2.4	1.8	2.1
19	2.1	4.3	4.6	2.55	3.9	4.8	6.4	4.0	6.0	2.55	1.8	2.0
20	2.25	4.4	4.4	2.5	3.9	5.0	5.8	5.0	5.4	2.6	2.05	1.9
21	2.65	5.5	3.8	2.5	3.7	6.4	5.4	4.6	4.4	2.45	2.35	1.9
22	3.4	5.0	3.4	2.7	3.7	6.0	5.0	4.4	4.4	2.3	2.1	1.8
23	2.7	4.4	3.0	2.7	4.8	5.2	4.6	4.1	4.3	2.2	1.9	1.8
24	2.8	4.0	3.0	2.5	9.7	5.0	4.4	3.8	4.1	2.2	1.8	1.8
25	2.7	4.0	3.4	2.35	7.0	4.9	4.2	3.5	4.0	2.1	1.85	1.7
26	2.5	4.4	3.4	-------	5.6	5.0	3.9	3.8	3.6	2.2	2.15	1.7
27	2.3	4.4	3.2	-------	5.0	5.2	3.8	3.4	3.4	2.2	2.95	1.6
28	2.1	8.0	2.9	-------	4.6	6.5	3.6	3.2	3.3	2.2	3.2	1.6
29	2.0	13.0	2.9	-------	-------	8.2	3.4	3.1	3.2	2.35	2.9	1.6
30	2.0	10.2	2.65	3.8	-------	7.4	3.3	3.0	5.0	2.5	2.7	1.6
31	2.0	-------	2.5	3.8	-------	6.4	-------	2.8	-------	2.3	2.6	-------

Note—Stage-discharge relation Jan. 4, Jan. 13 to Feb. 2 and Feb. 17-20 affected by ice. Gage height Jan. 26-29 not observed.

Daily discharge, in second-feet, of Delaware River at Port Jervis, N. Y., for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	780	1,240	24,600	1,980	2,400	6,010	16,200	3,400	2,470	7,810	1,800	2,070
2	780	2,070	22,500	1,640	2,200	5,050	15,700	3,160	2,260	12,600	2,360	2,260
3	780	3,650	24,600	1,980	6,700	4,750	13,600	2,920	3,400	13,600	2,920	1,800
4	880	3,160	24,600	2,400	8,600	4,750	15,700	2,690	32,000	12,600	3,160	1,890
5	1,180	2,690	16,800	2,920	6,700	4,180	15,700	4,750	18,000	9,840	3,160	2,160
6	1,720	2,470	12,600	6,010	4,180	3,910	14,600	8,600	15,700	8,200	2,800	2,470
7	1,470	2,260	9,840	6,010	3,650	7,430	13,600	7,810	13,600	6,010	2,070	2,260
8	1,240	2,070	9,010	3,910	3,160	52,500	11,600	6,700	12,600	5,360	1,980	2,470
9	1,240	1,890	7,430	3,160	3,040	31,200	12,100	6,010	10,700	4,460	2,360	2,070
10	1,110	1,800	6,700	2,920	2,690	20,500	12,600	5,050	8,200	3,910	1,890	2,070
11	1,220	1,980	6,010	2,580	2,690	15,700	13,100	4,460	6,350	3,400	1,720	1,800
12	1,550	2,260	5,360	1,800	2,470	14,600	21,200	4,180	6,700	3,040	1,550	1,890
13	2,160	2,260	5,050	1,800	2,470	15,700	19,800	4,180	10,300	2,690	1,550	1,980
14	2,470	2,260	4,460	1,800	2,470	16,800	18,000	3,910	7,060	2,470	1,550	2,260
15	2,260	2,360	4,180	1,900	2,470	19,800	16,800	3,650	6,010	2,260	1,390	1,980
16	2,070	2,800	2,800	2,000	2,260	16,800	19,200	3,160	4,750	2,070	1,240	1,720
17	1,890	3,650	2,260	2,000	2,000	13,600	16,800	2,920	4,750	2,070	1,110	1,550
18	1,720	4,180	4,750	2,100	2,000	10,700	15,700	2,800	25,300	1,890	990	1,390
19	1,390	7,060	8,200	2,200	3,000	9,010	16,800	6,010	14,600	2,160	900	1,240
20	1,640	7,430	7,430	2,100	4,200	9,840	13,600	9,840	11,600	2,260	1,320	1,110
21	2,360	12,100	5,360	2,000	5,050	16,800	11,600	8,200	7,430	1,980	1,800	1,110
22	4,180	9,840	4,180	2,000	5,050	14,600	9,840	7,430	7,430	1,720	1,390	990
23	2,470	7,430	3,160	2,000	9,010	10,700	8,200	6,350	7,060	1,550	1,110	990
24	2,690	6,010	3,160	1,900	40,400	9,840	7,430	5,360	6,350	1,550	990	990
25	2,470	6,010	4,180	1,800	20,500	9,420	6,700	4,460	6,010	1,390	1,050	880
26	2,070	7,430	4,180	}	12,600	9,840	5,680	5,360	4,750	1,550	1,470	880
27	1,720	7,430	3,650		9,840	10,700	5,360	4,180	4,180	1,550	3,040	780
28	1,390	27,500	2,920	2,200	8,200	17,400	4,750	3,650	3,910	1,550	3,650	780
29	1,240	67,300	2,920	}		29,000	4,180	3,460	3,650	1,800	2,920	780
30	1,240	44,400	2,360	2,600	-------	23,200	3,910	3,160	9,840	2,070	2,470	780
31	1,240	-------	2,070	2,200	-------	16,800	-------	2,690	-------	1,720	2,260	-------

Note.—Discharge Jan. 4, Jan. 13 to Feb. 2 and Feb. 17-20 estimated, because of ice, from discharge measurement, weather records, study of gage height graph and comparison with other stations in the drainage. Braced figures show mean discharge for the period included.

Monthly discharge of Delaware River at Port Jervis, N. Y., for the year ending Sept. 30, 1922

(Drainage area 3,070 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	4,180	780	1,700	0.554	0.64
November	67,300	1,240	8,500	2.77	3.09
December	24,600	2,070	7,980	2.60	3.00
January	6,010	1,640	2,470	.805	.93
February	40,400	2,000	6,430	2.09	2.18
March	52,500	3,910	14,600	4.76	5.49
April	21,200	3,910	12,700	4.14	4.62
May	9,840	2,690	4,850	1.58	1.82
June	32,000	2,260	9,230	3.01	3.36
July	13,600	1,390	4,100	1.34	1.54
August	3,650	990	1,940	.632	.73
September	2,470	780	1,590	.518	.58
The Year	67,300	780	6,320	2.06	27.98

DELAWARE BASIN—STATION NO. 5

BUSHKILL CREEK NEAR SHOEMAKERS

Location.—At single-span steel highway bridge, about three-quarters of a mile northwest of Shoemakers, Monroe County.

Drainage Area.—115 square miles.

Records Available.—September 19, 1908, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Walter C. Haywood.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control is at the first of a series of riffles, a short distance below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 4.50 feet observed at 7 a. m. March 8 (discharge, about 1,340 second-feet); minimum, 0.96 foot at 7 a. m. October 2 (discharge, 19 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 20 and 100 second-feet and fairly well defined from 100 to 800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

The following discharge measurement was made by H. J. McIntyre: No. 38, June 23: Gage height, 2.13 feet; discharge, 251 second-feet.

Daily Mean Gage Height, in feet, of Bushkill Creek near Shoemakers, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.99	1.10	2.64	1.95	2.52	2.70	3.00	1.95	1.86	2.20	1.38	1.18
2	.98	1.35	2.50	2.26	2.72	2.73	2.96	1.94	1.95	2.88	1.39	1.15
3	1.00	1.38	3.02	2.48	2.88	2.71	2.89	1.90	2.58	2.74	1.46	1.14
4	1.04	1.33	2.84	2.45	2.80	2.71	2.87	2.24	3.05	2.58	1.50	1.22
5	1.05	1.24	2.72	2.34	2.77	2.70	2.84	3.20	2.86	2.45	1.42	1.32
6	1.06	1.22	2.56	2.27	2.74	2.64	2.76	2.95	3.40	2.31	1.36	1.26
7	1.04	1.18	2.42	2.18	2.68	2.97	2.71	2.76	3.28	2.16	1.32	1.31
8	1.00	1.15	2.33	2.22	2.64	4.29	2.66	2.66	2.96	2.08	1.32	1.23
9	1.01	1.15	2.20	2.05	2.66	3.89	2.60	2.50	2.81	2.04	1.30	1.22
10	1.05	1.18	2.19	1.97	2.64	3.76	2.52	2.42	2.66	1.94	1.26	1.18
11	1.04	1.20	2.14	2.00	2.63	3.59	2.37	2.32	2.54	1.89	1.23	1.15
12	1.06	1.20	2.10	2.14	2.59	3.52	2.54	2.25	2.50	1.86	1.23	1.45
13	1.05	1.20	2.06	2.30	2.55	3.47	2.46	2.19	2.32	1.82	1.23	1.06
14	1.05	1.20	2.00	2.28	2.50	3.47	2.37	2.12	2.22	1.80	1.22	1.46
15	1.04	1.20	1.94	2.24	2.50	3.44	3.06	2.10	2.14	1.74	1.22	1.33
16	1.00	1.20	2.00	2.20	2.51	3.34	3.00	2.06	2.04	1.68	1.22	1.24
17	1.00	1.21	2.09	2.18	2.52	3.16	2.85	2.00	2.04	1.67	1.22	1.17
18	1.00	1.26	2.28	2.20	2.52	2.97	2.94	2.14	2.38	1.62	1.22	1.14
19	1.00	1.28	2.38	2.18	2.56	2.86	2.80	2.66	2.41	1.67	1.18	1.13
20	1.06	1.72	2.26	2.16	2.60	3.27	2.66	2.82	2.32	1.62	1.16	1.10
21	1.27	1.75	2.12	2.18	2.65	3.26	2.52	2.64	2.25	1.58	1.13	1.10
22	1.21	1.70	1.96	2.21	2.70	3.02	2.44	2.53	2.18	1.54	1.10	1.09
23	1.15	1.64	2.09	2.25	2.81	2.81	2.40	2.42	2.09	1.50	1.1'	1.05
24	1.15	1.48	2.15	2.28	3.18	2.80	2.32	2.32	1.99	1.50	1.10	1.05
25	1.13	1.46	2.14	2.32	3.12	2.80	2.26	2.23	1.94	1.50	1.14	1.06
26	1.08	1.40	2.21	2.34	3.06	2.76	2.20	2.28	1.90	1.48	1.24	1.06
27	1.05	1.52	2.28	2.37	3.01	2.77	2.15	2.19	1.90	1.46	1.27	1.05
28	1.05	2.30	2.31	2.43	2.91	2.77	2.08	2.10	1.90	1.45	1.25	1.05
29	1.05	3.01	2.37	2.48	-------	2.84	2.02	2.02	1.86	1.48	1.22	1.05
30	1.05	2.88	2.50	2.43	-------	2.76	1.98	1.96	1.80	1.40	1.19	1.05
31	1.05	-------	2.60	2.47	-------	2.76	-------	1.88	-------	1.40	1.15	-------

Note.—Stage-discharge relation Dec. 25 to Jan. 4, Jan. 6 to Feb. 2 and Feb. 4 to Mar. 6 affected by ice.

Daily discharge, in second-feet, of Bushkill Creek near Shoemakers, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	27	476	130	130	340	640	164	137	265	49	33
2	20	46	405	150	340	280	616	161	164	593	50	30
3	21	49	640	200	593	240	593	148	452	522	58	30
4	23	45	570	280	420	200	570	283	640	452	62	36
5	24	37	499	330	200	180	570	734	570	382	53	44
6	25	36	428	220	160	260	522	616	828	316	47	39
7	23	33	367	180	160	616	499	522	781	247	44	43
8	21	30	325	160	160	1250	476	476	616	212	44	36
9	22	30	265	150	150	1060	452	405	546	196	42	36
10	24	33	260	140	160	1020	405	367	476	161	39	33
11	23	34	238	150	170	922	344	320	428	145	36	30
12	25	34	220	160	180	875	428	288	405	137	36	56
13	24	34	204	170	200	875	386	260	320	126	36	88
14	24	34	180	160	200	875	344	229	274	120	36	58
15	23	34	161	150	220	828	687	220	238	106	36	45
16	21	34	180	140	220	781	640	204	196	92	36	37
17	21	35	216	140	200	734	570	180	196	90	36	32
18	21	39	302	160	200	616	616	238	349	80	36	30
19	21	40	349	160	150	570	546	476	363	90	33	29
20	25	101	293	160	200	781	476	546	320	80	31	27
21	40	108	229	150	400	781	405	476	288	73	29	27
22	35	96	164	150	360	640	377	428	256	68	27	26
23	30	84	216	150	400	570	368	367	216	62	27	24
24	30	60	242	140	600	546	320	320	177	62	27	24
25	29	58	200	130	500	546	293	279	161	62	30	24
26	26	51	180	130	380	522	265	302	148	60	37	24
27	24	65	170	130	360	522	242	260	148	58	40	24
28	24	311	200	130	360	522	212	220	148	56	38	24
29	24	640	240	130	-------	570	188	188	137	60	36	24
30	24	593	200	140	-------	522	174	167	137	51	33	24
31	24	-------	160	130	-------	522	-------	142	-------	51	30	-------

Note.—Discharge Dec. 25 to Jan. 4, Jan. 6 to Feb. 2 and Feb. 4 to Mar. 6 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for McMichael's Creek near Stroudsburg.

Monthly discharge of Bushkill Creek near Shoemakers, for the year ending Sept. 30, 1922

(Drainage area 115 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	40	20	24.5	0.213	0.25
November	640	27	95.0	.826	.92
December	640	160	283	2.46	2.84
January	330	130	161	1.40	1.61
February	600	130	278	2.42	2.52
March	1,250	180	631	5.49	6.33
April	687	174	440	3.83	4.27
May	734	142	322	2.80	3.23
June	828	137	337	2.93	3.27
July	503	51	164	1.43	1.65
August	62	27	38.5	.335	.39
September	88	24	34.6	.301	.34
The year	1,250	20	234	2.03	27.62

DELAWARE BASIN—STATION NO. 6

McMICHAELS CREEK NEAR STROUDSBURG

Location.—At single-span steel railroad bridge, Wilkes-Barre & Eastern R. R. car shops, about three-quarters of a mile southwest of Stroudsburg, Monroe County.

Drainage Area.—62 square miles.

Records Available.—August 10, 1911, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by H. Q. Snyder.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of silt and stones. Control for medium and low stages is at a gravel and boulder bar, where there is a pronounced fall in the stream, about 600 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.8 feet at 8 p. m. March 7 (discharge about 1,630 second-feet); minimum, 2.51 feet at 8.15 a. m. September 28 (discharge, 20 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage relation probably permanent throughout the year except when affected by ice. Rating curve well defined between 25 and 150 second-feet and fairly well defined from 150 to 800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

The following discharge measurement was made by H. L. Landis: No. 40, June 23: Gage height, 3.15 feet; discharge, 83.8 second-feet.

Daily Mean Gage Height, in feet, of McMichaels Creek near Stroudsburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.64	2.74	3.74	3.32	2.97	3.46	4.49	3.20	3.10	4.12	2.88	2.82
2	2.64	2.97	3.73	3.33	3.83	3.44	4.12	3.24	3.13	4.30	2.89	2.74
3	2.68	2.76	4.44	3.32	4.15	3.35	4.05	3.22	3.62	3.60	2.91	------
4	2.68	2.72	------	3.24	3.60	3.22	3.99	3.41	3.63	3.56	3.12	3.10
5	2.62	2.72	3.82	3.60	3.25	------	3.88	4.13	3.52	3.44	2.91	2.93
6	2.62	2.72	3.70	3.26	3.20	3.30	3.70	3.91	4.02	3.35	2.93	2.80
7	2.62	2.68	3.64	3.21	3.24	4.60	------	3.76	3.93	3.24	2.87	2.72
8	2.64	2.62	3.52	------	3.20	5.97	------	3.58	3.74	3.21	2.80	2.67
9	2.68	2.66	3.44	3.13	3.18	4.93	3.67	3.46	3.64	------	2.80	2.71
10	2.67	2.76	3.42	3.04	3.14	4.36	3.62	3.43	3.52	3.14	2.84	------
11	2.60	2.70	------	------	3.16	4.25	3.58	3.40	3.64	3.13	2.77	2.72
12	2.61	2.72	3.41	3.02	------	------	3.56	3.40	3.62	3.08	2.76	2.92
13	2.64	2.68	3.34	3.05	3.26	4.17	3.53	3.42	3.46	3.05	2.71	2.88
14	2.62	2.66	3.28	3.10	3.22	4.10	3.64	------	3.34	2.96	2.68	2.82
15	2.62	2.62	3.21	------	3.22	4.02	5.00	3.44	3.28	2.96	2.73	2.78
16	2.61	2.68	3.28	3.10	------	3.90	------	3.34	3.27	2.98	2.72	2.66
17	2.59	2.78	3.12	3.10	3.23	3.82	4.19	3.36	3.22	3.02	2.69	2.62
18	2.60	2.66	3.68	3.12	3.22	3.74	4.18	3.38	3.28	3.00	2.70	2.64
19	2.57	2.67	3.36	3.05	3.07	3.63	4.02	3.56	3.30	3.25	2.74	2.66
20	2.83	3.09	3.22	3.09	3.32	4.41	3.92	3.46	3.22	3.01	2.7[illegible]	2.67
21	2.81	2.94	3.16	3.13	3.76	4.33	3.86	3.44	3.22	2.96	2.69	2.68
22	2.62	2.82	3.12	------	3.63	3.93	3.62	3.41	3.21	3.00	2.66	2.66
23	------	2.76	3.16	3.05	3.99	3.81	3.62	3.36	3.14	------	2.80	2.66
24	2.59	2.74	3.28	3.05	4.05	3.62	3.55	3.28	3.05	2.93	2.79	------
25	2.61	2.84	------	3.05	3.76	3.58	3.48	3.32	3.00	2.95	2.76	2.65
26	2.56	2.68	3.21	3.05	------	------	3.42	3.21	2.95	2.96	2.82	2.60
27	2.59	2.93	3.20	3.05	3.62	3.55	3.38	3.22	2.93	3.00	------	2.58
28	2.64	4.39	3.29	3.05	3.60	3.64	3.28	------	3.03	2.90	2.81	2.58
29	2.68	4.68	3.34	------	------	3.68	3.22	3.14	3.02	2.94	2.76	2.64
30	2.68	3.92	3.31	3.07	------	3.68	------	3.10	2.95	------	2.71	2.60
31	2.68	------	3.31	3.04	------	3.79	------	3.07	------	2,82	2.72	------

Note.—Gage height not observed on days of no record. Stage-discharge relation Dec. 30 to Jan. 4 affected by ice.

Daily discharge, in second-feet, of McMichaels Creek near Stroudsburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	33	198	55	56	131	457	85	71	307	46	40
2	26	56	198	60	226	127	307	91	75	380	47	33
3	26	35	43[illegible]	65	3[illegible]	110	290	88	161	161	49	[illegible]4
4	26	32	307	85	161	88	272	121	173	150	74	71
5	25	3[illegible]	211	161	9[illegible]	95	240	325	139	127	49	51
6	25	32	185	95	85	101	185	240	272	110	51	38
7	25	29	175	87	91	497	173	198	256	91	45	32
8	26	25	139	81	85	1,160	161	161	198	87	38	28
9	29	28	127	75	82	623	173	131	173	82	38	31
10	28	35	123	64	77	399	161	125	139	77	42	32
11	24	30	123	63	79	362	161	119	173	75	36	32
12	25	32	121	61	87	325	150	119	161	69	35	50
13	26	29	108	65	95	3[illegible]	150	123	131	65	31	46
14	25	28	98	71	88	307	173	125	108	55	29	40
15	25	25	87	71	88	272	667	127	98	55	32	36
16	25	29	98	71	88	240	418	108	96	57	32	23
17	24	36	74	71	90	211	343	112	88	61	29	25
18	24	28	185	74	88	198	343	115	98	59	30	26
19	22	28	112	65	67	173	272	150	101	93	33	28
20	41	70	88	70	105	418	240	131	88	60	33	28
21	30	52	79	75	198	399	226	127	88	55	29	29
22	25	40	74	70	173	256	161	121	87	59	28	28
23	25	35	79	65	272	211	161	112	77	55	38	28
24	24	33	98	65	290	161	150	98	65	51	37	28
25	25	42	91	65	198	161	155	105	59	54	35	27
26	2[illegible]	29	87	65	185	150	123	87	54	55	40	24
27	24	51	85	65	161	150	115	88	51	59	40	22
28	26	418	99	65	161	173	98	8[illegible]	63	48	39	23
29	29	538	108	66	------	185	88	77	61	52	35	26
30	29	240	85	67	------	185	87	71	54	46	31	24
31	29	------	60	64	------	211	------	67	------	40	32	------

Note.—Discharge estimated Oct. 23, Dec. 4, 11, 25, Jan. 8, 11, 15, 22, 29, Feb. 12, 16, 26, Mar. 5, 12, 26, Apr. 7, 8, 16, 30, May 14, 28, July 9, 23, 30, Aug. 27 and Sept. 3, 10 and 24, because of no gage height record, and Dec. 30 to Jany. 4, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lehigh River at Tannery.

Monthly discharge of McMichaels Creek near Stroudsburg, for the year ending Sept. 30, 1922.

(Drainage area 62 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	41	22	26.6	0.429	0.49
November	538	25	71.7	1.16	1.29
December	438	60	133	2.15	2.48
January	161	55	72.3	1.17	1.35
February	325	56	136	2.19	2.28
March	1,160	88	271	4.37	5.04
April	667	87	223	3.60	4.02
May	325	67	124	2.00	2.31
June	272	51	115	1.85	2.06
July	380	40	90.2	1.45	1.67
August	74	28	38.2	.616	.71
September	71	23	32.6	.526	.59
The Year	1,160	22	111	1.79	24.29

DELAWARE BASIN—STATION NO. 7

LEHIGH RIVER AT TANNERY

Location.—At single-span steel highway bridge, Tannery, Carbon County.

Drainage Area.—335 square miles.

Records Available.—June 23, 1914, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by G. D. Heimbach. Elevation of gage zero 1,029.41 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and large stones. Control is at a riffle about 300 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.3 feet at noon March 8 (discharge, about 7,410 second-feet); minimum, 2.56 feet at 8 a. m. September 30 (discharge, 111 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 130 and 1,000 second-feet and fairly well defined from 1,000 to 3,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extreme stages when they are fair.

The following discharge measurement was made by H. L. Landis: No 23, June 24: Gage height, 4.10 feet; discharge, 786 second-feet.

Daily Mean Gage Height, in feet, of Lehigh River at Tannery, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.82	2.82	5.28	3.65	3.66	4.33	4.95	3.75	3.58	3.97	3.11	3.77
2	2.80	3.40	6.45	3.58	4.20	4.31	4.83	3.69	3.62	6.22	3.09	3.28
3	2.82	3.40	6.68	3.95	4.56	4.17	4.63	3.59	4.99	5.80	3.15	3.02
4	3.16	3.34	6.08	4.28	4.12	3.99	5.05	4.02	6.01	5.28	3.66	3.07
5	3.02	3.26	5.62	4.21	4.05	4.22	5.32	5.57	5.54	4.82	3.48	3.35
6	2.82	3.08	5.12	4.02	4.02	4.06	4.97	5.27	6.25	4.60	3.26	3.25
7	2.77	3.07	4.65	3.79	3.91	5.29	4.99	4.89	6.15	4.38	3.18	3.12
8	2.78	3.07	4.52	3.72	3.67	7.97	5.27	4.59	5.27	4.08	3.14	3.08
9	2.84	3.04	4.20	3.82	3.85	7.07	4.99	4.29	4.89	3.88	3.09	2.94
10	2.96	3.05	4.11	3.62	3.66	6.37	4.77	4.21	4.65	3.78	3.06	2.82
11	3.30	3.04	4.10	3.62	3.59	5.92	4.62	3.95	4.70	3.68	3.08	2.92
12	2.90	3.00	4.11	3.62	3.61	5.55	5.11	3.89	5.45	3.62	3.02	3.25
13	2.82	2.94	3.98	3.58	3.61	5.52	4.85	3.75	4.95	3.64	2.88	3.52
14	2.83	3.00	3.78	4.02	3.65	5.56	4.87	3.51	4.57	3.66	2.99	3.38
15	2.78	3.04	3.70	4.18	3.61	5.59	6.52	3.51	4.38	3.48	2.98	3.10
16	2.62	3.08	3.52	4.62	3.56	5.57	5.92	3.49	4.29	3.34	2.94	3.06
17	2.78	3.13	3.60	4.60	3.62	5.12	5.61	3.45	4.19	3.32	2.84	2.88
18	2.82	3.24	5.42	4.35	3.99	4.72	5.52	3.51	4.62	3.42	2.84	2.88
19	2.66	3.26	5.18	4.02	3.92	4.55	5.39	4.59	4.42	3.62	2.86	2.74
20	2.76	4.20	4.65	3.82	3.90	5.57	5.22	5.05	4.25	3.52	2.84	2.66
21	3.48	4.15	4.52	3.82	4.29	5.45	4.97	4.47	4.19	3.44	2.88	3.04
22	3.28	3.95	4.38	3.77	4.33	5.12	4.79	4.25	4.27	3.32	2.75	3.02
23	3.18	3.76	4.28	3.78	5.02	4.82	4.55	4.02	4.27	3.32	2.75	3.02
24	3.12	3.68	4.38	3.81	6.42	4.65	4.32	4.01	4.06	3.12	2.68	2.88
25	3.08	3.66	4.36	4.80	5.89	4.63	4.27	4.06	3.69	3.15	2.65	2.92
26	2.98	3.54	4.14	4.83	5.37	4.62	4.15	4.09	3.68	3.14	3.46	2.74
27	2.92	3.86	4.02	4.98	4.92	4.68	4.09	4.05	3.50	3.13	3.40	2.69
28	2.82	6.15	3.99	5.10	4.75	5.01	4.05	3.95	3.68	3.14	3.22	2.70
29	2.74	7.60	3.78	5.08	-------	5.11	3.85	3.79	3.98	3.10	3.26	2.65
30	2.72	6.00	3.54	4.35	-------	4.96	3.81	3.61	3.92	2.94	3.15	2.60
31	2.82	-------	3.62	3.64	-------	4.95	-------	3.63	-------	3.09	3.12	-------

Note.—Stage—discharge relation Dec. 30 to Jan. 2, Jan. 6-10, Jan. 13 to Feb. 1, Feb. 5-10 and 17-21 affected by ice.

Daily discharge, in second-feet, of Lehigh River at Tannery, for the year ending Sept 30, 1922.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	154	1,950	340	260	955	1,600	515	430	645	228	515
2	150	335	3,530	340	830	910	1,380	485	430	3,210	222	288
3	154	335	4,050	645	1,180	790	1,180	430	1,600	2,610	242	197
4	246	311	3,050	910	750	680	1,600	680	2,900	1,950	457	214
5	197	281	2,330	830	660	850	1,950	2,330	2,200	1,380	371	315
6	154	218	1,710	556	550	715	1,600	1,950	3,210	1,180	281	278
7	147	197	1,180	440	480	1,950	1,600	1,490	3,210	1,000	253	232
8	147	197	1,090	320	460	6,700	1,950	1,180	1,950	750	239	218
9	151	204	830	320	460	4,790	1,600	910	1,490	610	222	178
10	180	208	750	260	420	3,530	1,380	830	1,180	545	211	154
11	297	204	750	430	420	2,750	1,180	645	1,280	485	218	174
12	170	190	750	430	430	2,330	1,710	610	2,070	430	197	278
13	154	178	680	320	430	2,200	1,380	515	1,600	457	166	380
14	156	190	545	320	457	2,330	1,490	380	1,090	457	188	327
15	140	204	485	360	430	2,330	3,700	380	1,000	371	186	225
16	118	218	380	340	405	2,330	2,750	376	910	311	178	211
17	140	236	430	280	360	1,710	2,330	358	820	303	158	166
18	154	274	2,070	240	360	1,280	2,200	380	1,180	344	158	166
19	122	281	1,830	240	400	1,180	2,070	1,180	1,000	430	162	138
20	147	830	1,180	280	480	2,330	1,830	1,600	870	380	158	124
21	371	790	1,090	360	600	2,070	1,600	1,040	830	358	166	204
22	288	645	1,000	480	955	1,710	1,380	870	870	303	140	197
23	252	515	910	480	1,600	1,380	1,180	680	870	246	154	186
24	232	485	1,000	260	3,530	1,180	910	680	715	232	127	166
25	218	430	955	260	2,750	1,180	870	715	485	242	122	174
26	186	405	790	220	2,070	1,180	790	756	485	239	362	138
27	174	578	680	220	1,490	1,280	750	715	485	236	335	128
28	154	3,210	680	200	1,380	1,600	715	645	485	239	267	115
29	138	4,600	545	200	-------	1,710	578	545	680	225	281	122
30	134	2,900	380	200	-------	1,600	545	430	610	178	242	115
31	154	-------	320	200	-------	1,600	-------	457	-------	222	232	-------

Note.—Discharge Dec. 30 to Jan. 2, Jan. 6-10, Jan. 13 to Feb. 1, Feb. 5-10 and Feb. 17-21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Nescopeck Creek at St. Johns, Schuylkill River at Reading and Lehigh River at Bethlehem.

Monthly discharge of Lehigh River at Tannery, for the year ending Sept. 30, 1922.
(Drainage area 335 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	371	118	181	0.540	0.62
November	4,600	154	660	1.97	2.20
December	4,050	320	1,220	3.64	4.20
January	916	200	370	1.10	1.27
February	2,530	260	877	2.62	2.73
March	6,700	680	1,910	5.70	6.57
April	3,700	545	1,530	4.57	5.10
May	2,330	358	798	2.38	2.74
June	3,210	430	1,230	3.67	4.10
July	3,210	178	663	1.98	2.28
August	457	122	223	.666	.77
September	515	115	211	.630	.70
The Year	6,700	115	821	2.45	33.28

DELAWARE BASIN—STATION NO. 8

LITTLE LEHIGH CREEK AT ALLENTOWN

Location.—At three-span concrete highway bridge, Lehigh Street, Allentown, Lehigh County, about 2,500 feet above the confluence of Little Lehigh and Jordan creeks.

Drainage Area.—106 square miles.

Records Available.—April 29, 1921, to September 30, 1922.

Gage.—Staff attached to downstream end of left pier; read to hundredths twice daily by Nelson Schantz; during high stages more frequently.

Discharge Measurements.—Made from downstream side of trolley bridge, which is just below the gage, or by wading.

Channel and Control.—Channel is confined by retaining walls and brick buildings. Bed is composed of small gravel. Control is at a riffle a short distance downstream from gage, where the bed is composed of sand and gravel deposited July 20, 1921; shifts occasionally.

Extremes of Stage.—Maximum gage height during the year, 8.40 feet observed at 7.30 p. m. February 2; minimum, 0.80 foot several times in September.

Ice.—Stage-discharge relation not affected by ice since the establishment of station.

Cooperation.—Station is maintained in cooperation with the American Steel and Wire Company.

Discharge measurements of Little Lehigh Creek at Allentown, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
6	Oct. 20a	H. J. McIntyre	0.93	86.7
7	20a	do	.90	93.3
8	June 21	H. L. Landis	1.18	149
9	22	H. J. McIntyre	1.18	154

a Measurement made by wading 10 feet below gage.

Daily Mean Gage Height, in feet, of Little Lehigh Creek at Allentown, for the year ending Sept. 30, 1922.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.92	0.92	1.31	0.93	0.89	1.24	1.85	1.20	1.08	1.14	1.67	0.92
2	.92	.92	1.27	.92	3.29	1.50	1.44	1.19	1.12	2.15	1.34	.91
3	.95	.92	2.00	.91	4.07	1.24	1.38	1.18	1.64	1.27	1.02	.87
4	.93	.90	1.44	.95	1.58	1.27	1.37	1.48	1.71	1.18	1.11	.94
5	.93	.87	1.20	1.01	1.18	1.69	1.37	2.60	1.35	1.24	.99	1.03
6	.91	.86	1.09	1.04	1.17	1.79	1.31	1.71	1.36	1.15	.92	.92
7	.91	.91	1.05	.96	1.56	2.19	1.43	1.45	1.16	1.06	.98	.86
8	.90	.87	1.03	.92	1.08	4.66	1.40	1.27	1.12	1.07	.95	.87
9	.98	.92	.97	.96	1.05	2.08	1.33	1.23	1.11	1.07	.95	.89
10	.96	.91	1.02	.96	1.06	1.68	1.30	1.25	1.10	1.06	.92	.86
11	.91	.90	1.04	.95	1.07	1.78	1.26	1.16	1.08	1.07	.93	.89
12	.91	.91	1.05	.95	1.16	2.00	1.34	1.16	1.08	1.07	.93	.89
13	.92	.85	.96	.92	1.24	1.90	1.27	1.20	1.06	1.08	.93	.89
14	.89	1.01	1.02	.97	1.13	1.78	1.31	1.18	1.07	1.07	.97	.84
15	.88	.88	.99	.96	1.16	1.72	1.91	1.28	1.07	1.06	.93	.86
16	.87	.88	.99	.94	1.09	1.58	1.40	1.25	1.07	1.03	.93	.86
17	.98	.86	.99	.91	1.06	1.52	1.36	1.17	1.07	1.07	.97	.82
18	.88	.91	1.05	.95	1.04	1.40	1.42	1.33	1.07	1.07	.93	.87
19	.91	.86	1.04	.95	1.05	1.40	1.33	1.40	1.07	1.07	.94	.86
20	.95	.89	.99	.97	2.20	2.14	1.33	1.39	1.06	1.06	.90	.84
21	.92	.96	1.00	1.01	2.86	1.87	1.27	1.19	1.05	1.06	.90	.84
22	.93	.92	.95	1.04	1.96	1.56	1.27	1.20	1.18	1.04	.92	.86
23	.90	.93	.96	1.00	2.05	1.47	1.26	1.17	1.08	1.06	.92	.87
24	.91	.87	1.01	.93	2.07	1.44	1.24	1.16	1.07	1.03	.91	.82
25	.87	.92	1.04	.91	1.39	1.39	1.25	1.15	1.07	1.02	.93	.84
26	.91	.90	1.01	.91	1.29	1.37	1.25	1.16	1.07	1.01	.92	.85
27	.8-	.90	.98	.89	1.58	1.26	1.21	1.13	1.07	1.01	.91	.82
28	.90	1.59	.98	.91	1.41	1.40	1.24	1.12	1.07	1.02	.96	.82
29	.89	2.89	.95	.94	------	1.37	1.22	1.12	1.06	.98	.92	.83
30	.87	1.86	.90	.94	------	1.36	1.20	1.11	1.06	.91	.93	.85
31	.93	------	.9-	.90	------	1.38	------	1.11	------	.99	.88	------

DELAWARE BASIN—STATION NO. 9

LEHIGH RIVER AT BETHLEHEM

Location.—At nine-span steel highway bridge, three spans over the normal river channel, New Street, Bethlehem, Northampton County, about 800 feet upstream from the south of Monocacy Creek and about 5 miles downstream from the south of Jordan Creek.

Drainage Area.—1,240 square miles.

Records Available.—September 22, 1902, to February 13, 1905, and April 26, 1909, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by William E. Roberts. Elevation of gage zero 210.64 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left is low and subject to overflow at high stages. Bed is composed of sand and gravel. Control is at a riffle about 1,000 feet below gage; shifts occasionally. Monocacy Creek enters from left just below the low-water control.

Extremes of Discharge.—Maximum stage during the year, estimated from Allentown record, 9.8 feet March 8 (discharge, 19,100 second-feet); minimum, estimated from Allentown record, 1.6 feet September 21, 27 and 29 (discharge, 430 second-feet).

Ice.—Stage-discharge relation seldom affected by ice.

Diversions.—During navigation season water is diverted past the gage through the Lehigh Coal and Navigation Company Canal, which follows the left bank and passes under the left span of bridge.

Accuracy.—Stage-discharge relation permanent. Rating curve well defined below 1,800 second-feet and fairly well defined between 1,800 and 31,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good for medium and high stages; only fair for low stages owing to uncertain amount of water diverted by canal.

The following discharge measurement was made by H. J. McIntyre: No. 64, June 22: Gage height, 3.20 feet; discharge, 2,250 second feet.

Daily discharge, in second-feet, of Lehigh River at Bethlehem, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	435	510	6,210	740	830	3,160	5,730	1,760	1,550	1,370	600	600
2	435	740	4,810	930	3,520	3,160	5,270	1,550	2,530	5,270	66	930
3	435	740	12,200	1,040	6,210	2,530	4,810	1,370	4,360	6,210	660	930
4	450	660	10,500	1,200	6,210	2,530	4,810	1,760	5,730	4,330	930	1,040
5	480	660	7,210	1,550	2,530	2,830	5,270	7,730	7,210	3,520	930	930
6	450	660	5,730	1,760	1,550	3,520	4,360	6,700	11,900	3,160	740	830
7	440	600	4,360	1,200	1,760	4,360	4,810	5,730	10,500	2,530	740	660
8	440	510	3,520	930	2,250	19,100	5,270	4,810	8,260	2,000	660	600
9	480	510	2,830	1,040	930	12,200	4,360	3,520	6,700	1,760	660	550
10	460	600	2,530	830	1,200	10,500	3,930	3,160	4,810	1,550	660	550
11	450	600	2,250	830	1,040	8,800	3,520	2,530	3,930	1,370	660	510
12	460	600	2,250	830	1,370	9,360	4,360	1,760	5,270	1,370	600	600
13	450	550	2,000	830	1,040	8,500	4,810	2,250	4,360	1,370	600	830
14	450	480	1,760	830	1,200	7,730	3,520	2,250	3,520	1,370	600	740
15	450	460	1,370	830	1,040	7,730	6,700	2,530	3,160	1,200	600	600
16	450	460	1,040	740	1,200	6,700	7,210	2,000	2,830	1 040	550	550
17	450	480	1,200	600	1,040	6,210	7,210	1,550	2,530	930	510	510
18	435	510	1,760	740	930	5,270	7,210	2,000	2,250	930	480	480
19	450	550	4,360	830	1,040	5,730	5,270	3,520	2,000	1,760	480	450
20	510	1,370	2,830	930	1,200	5,730	4,810	4,810	2,530	1,200	480	435
21	600	1,370	2,530	1,040	3,930	7,210	3,930	4,360	2,250	1,040	460	430
22	660	1,040	1,760	1,200	4,360	5,730	3,520	4,360	2,000	930	460	450
23	660	930	1,760	1,370	4,810	4,810	3,520	3,520	2,000	930	450	480
24	600	930	2,000	830	9,940	3,930	3,520	3,160	1,760	830	450	480
25	550	930	2,000	740	7,210	3,160	3,160	2,830	1,550	830	480	460
26	480	930	1,760	660	6,210	3,160	3,160	2,830	1,370	830	510	440
27	460	1,040	1,550	660	4,810	3,520	2,830	2,530	1,370	740	550	430
28	460	2,250	1,370	660	4,360	3,930	2,530	2,530	1,550	740	600	440
29	460	12,200	1,550	740	-------	4,360	2,530	2,250	1,270	740	600	430
30	460	9,940	1,370	830	-------	4,360	2,250	2,000	1,370	740	550	435
31	480	-------	830	740	-------	4,810	-------	1,760	-------	740	550	-------

Note.—Discharge does not include the water diverted past the gage through the Lehigh Coal and Navigation Company Canal. Canal was closed Nov. 19 to Apr. 23. Discharge estimated, because of unsatisfactory gage height record, from United States Weather Bureau gage heights of Lehigh River at Allentown.

Monthly discharge of Lehigh River at Bethlehem, for the year ending Sept. 30, 1922

(Drainage area 1,240 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	660	435	482	0.389	0.45
November	12,200	460	1,460	1.18	1.32
December	12,200	830	3,200	2.58	2.97
January	1,760	600	925	.746	.86
February	9,940	830	2,990	2.41	2.51
March	19,100	2,530	5,950	4.80	5.53
April	7,210	2,250	4,470	3.60	4.02
May	7,730	1,370	3,080	2.48	2.86
June	11,900	1,370	3,750	3.02	3.37
July	6,210	740	1,720	1.39	1.60
August	930	450	595	.480	.55
September	1,040	430	595	.480	.54
The Year	19,100	430	2,430	1.96	26.58

Note.—Discharge and run-off does not include the water diverted past the gage through the Lehigh Coal and Navigation Company Canal. Canal was closed Nov. 19 to Apr. 23.

DELAWARE BASIN—STATION NO. 10

DELAWARE RIVER AT RIEGELSVILLE

Location.—At three-span suspension highway bridge between Riegelsville, Bucks County, Pa., and Riegelsville, Warren County. N. J., about 900 feet upstream from mouth of Musconetcong River.

Drainage Area.—6,430 square miles.

Records Available.—July 3, 1906, to September 30, 1922.

Gages.—Staff, in three sections, installed on left bank at upstream side of bridge; lower section inclined, middle and upper sections vertical. Standard chain attached to upstream side of bridge, installed to same datum as staff gage. Gages read by J. H. Brotzman.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a well defined riffle about one-half mile below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 20.4 feet at 10 p. m. November 29 (discharge, 106,000 second-feet); minimum, 2.3 feet on September 30 (discharge, 1,770 second-feet). 1906-1922: Maximum stage recorded, 25.0 feet March 28, 1913 (discharge, 144,000 second-feet); minimum, 1.55 feet at 8 a. m. September 20, 1908 (discharge, 870 second-feet).

Ice.—Stage-discharge relation not seriously affected by ice.

Diversions.—The Delaware Division of the Pennsylvania Canal diverted about 230 second-feet from the Lehigh River near its mouth from October 1 to December 9 and March 5 to December 13.

Accuracy.—Stage-discharge relation permanent. Rating curve well defined. Gage read to half tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Record furnished by United States Geological Survey Office, Trenton, N. J.

Discharge masurements of Delaware River at Riegelsville, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
30	Nov. 17a	Otto Lauterhahn	3.60	4,8 0
31	Jan. 20	do	3.71	5,300
32	Mar. 2	do	5.83	12,400
33	July 11b	do	4.50	7,430
34	Aug. 11	O. W. Hartwell and Otto Lauterhahn	3.26	4,010

a Measurement also made of discharge in canal, 228 second-feet.
b Measurement also made of discharge in canal, 231 second-feet.

Daily Mean Gage Height, in feet, of Delaware River at Riegelsville, for the year ending Sept. 30, 1922.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.45	2.78	12.0	3.75	3.07	6.47	9.70	4.67	4.64	6.33	3.14	3.50
2	2.38	2.85	10.0	3.45	4.84	5.87	9.30	4.49	4.14	7.83	3.04	3.38
3	2.35	3.15	10.8	2.85	6.47	5.43	8.90	4.42	5.03	8.60	3.02	3.40
4	2.41	3.2	12.4	3.25	4.97	5.30	8.70	4.36	9.10	9.00	3.70	3.68
5	2.48	3.65	10.3	3.8	5.10	5.43	9.10	7.00	11.25	7.70	3.74	4.05
6	2.51	3.3	8.95	4.35	5.37	8.60	8.80	7.95	10.45	6.81	3.72	3.70
7	2.85	3.1	7.90	4.17	5.23	7.55	9.05	7.60	10.10	5.95	3.52	3.58
8	2.71	3.13	7.03	4.95	4.67	16.9	8.90	6.85	9.10	5.35	3.24	3.50
9	2.63	3.03	6.43	4.37	4.27	16.5	8.40	6.30	7.85	5.11	3.12	3.45
10	2.58	3.05	5.83	4.13	4.25	12.35	8.80	5.85	7.00	4.83	3.24	3.40
11	2.55	2.98	5.57	4.00	4.13	10.85	8.20	5.45	6.50	4.58	3.30	3.22
12	2.78	2.95	5.40	3.15	4.25	10.70	8.00	5.10	6.30	4.32	3.08	3.20
13	2.78	3.08	5.23	3.45	4.10	10.25	10.45	4.93	6.77	4.12	3.00	3.30
14	2.81	3.13	5.03	3.15	3.90	9.80	9.55	4.83	6.47	4.07	2.88	3.30
15	3.05	3.18	4.77	3.27	3.93	10.25	9.65	4.80	5.67	3.84	2.80	3.28
16	3.03	3.13	4.25	3.37	3.83	10.45	11.2	4.63	5.17	3.67	2.75	3.10
17	2.75	3.59	4.09	3.40	3.45	9.55	10.15	4.34	4.93	3.52	2.72	2.95
18	2.68	3.64	4.22	3.43	3.37	8.30	9.60	4.36	4.85	3.54	2.65	2.82
19	2.61	3.82	5.63	3.60	3.55	7.60	9.30	5.25	9.40	3.82	2.58	2.75
20	2.71	4.95	6.7.	3.7[illegible]	4.[illegible]	8.0[illegible]	9.00	8.05	7.35	3.74	2.60	2.65
21	2.71	5.57	5.73	3.80	5.80	9.45	8.05	8.50	6.47	3.57	2.52	2.65
22	3.08	6.27	4.9[illegible]	3.40	5.30	9.15	7.60	7.13	6.10	3.40	2.70	2.60
23	3.92	5.53	4.08	3.66	6.1[illegible]	8.40	7.00	6.37	5.87	3.27	2.70	2.52
24	3.6[illegible]	4.93	4.40	3.45	8.3[illegible]	7.70	6.63	5.85	5.57	3.22	2.55	2.50
25	3.35	4.67	4.70	3.10	10.45	7.35	6.15	5.43	5.45	3.20	2.58	2.50
26	3.13	4.60	4.5[illegible]	2.85	8.75	7.35	5.83	5.30	5.03	3.24	2.65	2.48
27	3.05	4.9[illegible]	4.3[illegible]	2.75	7.80	7.35	5.47	5.25	4.70	3.22	2.85	2.40
28	2.9[illegible]	5.5[illegible]	4.1[illegible]	2.70	7.10	8.30	5.23	4.97	4.55	3.17	3.50	2.38
29	2.8[illegible]	17.1	4.19	2.9[illegible]	-------	11.05	5.05	4.63	4.39	3.14	3.70	2.38
30	2.7[illegible]	17.7	3.66	3.23	-------	11.30	4.96	4.32	4.44	3.27	3.40	2.30
31	2.78	-------	3.54	3.17	-------	9.95	-------	4.12	-------	3.27	3.30	-------

Note.—Staff gage readings, except Nov. 29 to Dec. 7, Mar. 7-24, Mar. 28 to Apr. 21, May 6-7, June 4-9, 19 and July 3-5, when chain gage was used.

Daily discharge, in second-feet, of Delaware River at Riegelsville, for the year ending Sept 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,250	2,940	44,400	5,610	3,630	15,000	30,400	8,480	6,230	14,200	3,590	5,010
2	2,160	2,940	32,160	4,420	5,160	12,400	28,200	7,820	6,540	20,700	3,330	4,420
3	2,080	3,630	36,900	3,050	15,000	10,900	26,100	7,490	9,500	24,500	3,330	4,420
4	2,160	3,880	47,000	3,880	9,500	10,500	25,000	7,490	27,100	26,000	5,310	5,010
5	2,340	5,010	33,900	5,920	9,840	10,900	27,100	17,100	39,300	20,200	5,310	5,010
6	2,340	4,140	26,600	7,490	10,900	13,100	25,600	21,600	34,500	16,300	5,310	5,310
7	3,050	3,880	21,100	6,850	10,200	19,400	26,600	19,700	32,700	13,100	4,710	5,010
8	2,760	3,630	17,100	9,500	8,480	79,300	26,100	16,300	27,100	10,900	3,880	4,710
9	2,630	3,390	14,600	7,490	7,170	76,300	26,100	14,200	20,700	9,840	3,590	4,420
10	2,580	3,330	12,400	6,540	6,850	47,000	25,600	12,400	17,100	8,820	3,880	4,420
11	2,440	3,390	11,600	6,230	6,540	37,500	22,600	10,900	15,000	8,150	4,140	3,880
12	2,940	3,280	10,900	3,880	6,850	36,300	21,000	9,840	14,200	7,170	3,590	3,800
13	2,940	3,630	10,200	4,420	6,540	33,300	34,500	9,160	16,300	6,540	3,330	4,140
14	2,940	3,630	9,500	3,880	5,920	31,000	29,900	8,820	15,000	6,540	3,080	4,140
15	3,390	3,880	8,820	4,140	5,920	33,300	29,900	8,820	12,000	5,610	2,840	4,140
16	3,330	3,630	6,850	4,420	5,610	31,500	39,300	8,150	10,200	5,310	2,720	3,800
17	2,840	5,010	6,540	4,420	4,420	29,900	33,300	7,170	9,160	4,710	2,600	3,200
18	2,730	5,010	6,850	4,420	4,420	23,000	29,900	7,490	8,820	4,710	2,480	2,840
19	2,530	5,610	11,600	5,010	5,010	19,700	28,200	10,200	28,800	5,610	2,370	2,720
20	2,730	9,500	16,300	5,310	6,850	21,600	26,600	21,600	18,800	5,310	2,370	2,480
21	2,730	11,600	12,000	5,610	12,400	28,800	21,600	24,000	15,000	5,010	2,160	2,600
22	3,630	14,200	9,160	5,310	10,500	31,000	19,400	17,500	13,500	4,420	2,600	2,370
23	5,920	11,200	6,540	5,010	13,500	23,500	17,100	14,600	12,700	4,140	2,600	2,160
24	5,010	9,160	7,820	4,420	23,000	20,200	15,400	12,400	11,600	3,880	2,260	2,160
25	4,420	8,480	8,480	3,630	34,500	18,800	13,900	10,900	10,900	3,880	2,370	2,160
26	3,630	8,150	8,150	3,050	25,600	18,800	12,400	10,500	9,500	3,880	2,480	2,160
27	3,390	9,500	7,820	2,840	20,700	18,800	11,200	10,200	8,480	3,880	2,900	1,960
28	3,280	11,200	6,850	2,730	17,500	23,000	10,200	9,500	8,150	3,880	4,710	1,960
29	3,050	80,800	6,850	3,160	-------	38,100	9,500	8,150	7,490	3,590	5,310	1,960
30	2,840	85,400	5,310	3,880	-------	39,900	9,160	7,170	7,490	4,140	4,420	1,700
31	2,940	-------	4,710	3,880	-------	32,100	-------	6,540	-------	4,140	4,140	-------

Note.—Discharge does not include water diverted past the gage through the Delaware Division of the Pennsylvania Canal. Canal was closed Dec. 10 to Mar. 4.

Monthly discharge of Delaware River at Riegelsville, for the year ending Sept 30, 1922

(Drainage area 6,430 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5,920	2,080	3,030	0.507	0.58
November	85,400	2,940	11,100	1.76	1.96
December	47,000	4,710	15,100	2.36	2.72
January	95,000	2,730	4,850	.754	.87
February	34,500	3,630	10,900	1.69	1.76
March	79,300	10,500	28,700	4.49	5.18
April	39,300	9,160	23,400	3.67	4.10
May	24,000	6,540	11,800	1.87	2.16
June	39,300	6,230	15,800	2.49	2.78
July	26,600	3,590	8,700	1.39	1.60
August	5,310	2,160	3,480	.575	.66
September	6,540	1,770	3,540	.586	.65
The Year	85,400	1,770	11,700	1.85	25.02

Note.—Discharge does not include the water diverted past the gage through the Delaware Division of the Pennsylvania Canal. Canal was closed Dec. 10 to Mar. 4. Run-off includes 230 second-feet, estimated flow in canal, Oct. 1 to Dec. 9 and Mar. 5 to Sept. 30.

DELAWARE BASIN—STATION NO. 11

LITTLE SCHUYLKILL RIVER AT TAMAQUA

Location.—At three-span stone arch highway bridge, Broad Street, Tamaqua, Schuylkill County, about 500 feet upstream from the mouth of Panther Creek.

Drainage Area.—44 square miles.

Records Available.—June 23, 1916, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by W. P. Griffiths.

Discharge Measurements.—Made from upstream side of bridge, by wading and at Panther Valley Water Company weir about one-half mile above the gage.

Channel and Control.—Section is entirely walled in above and below the bridge. Banks subject to overflow only during extreme floods. Bed is composed of gravel and rocks. Low-water control is a gravel bar extending diagonally across the channel at downstream

side of bridge. Stage-discharge relation not permanent, owing to changes in the gravel bar and lodging of debris and waste on the control.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.0 feet at 8 p. m. March 7 (discharge, about 3,000 second-feet); minimum 1.73 feet from 5 p. m. September 26 to 5 p. m. September 28 (discharge, 5.3 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Diversions.—The Panther Valley Water Company pumps water from the stream about one-half mile above the gaging station for mine service, which is returned to the stream below the gaging station.

Accuracy.—Stage-discharge relation subject to change owing to shifts in control and probability of debris and waste collecting on control; also affected by ice. Rating curve well defined below 25 second-feet and fairly well defined between 25 and 300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Little Schuylkill River at Tamaqua, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
24	Oct. 21a	H. J. McIntyre	2.00	25.5
25	21b	do	2.00	25.6
26	July 6c	do	2.24	60.2
27	Aug. 25	do	2.01	22.9
28	Sept. 8d	Panther Valley Water Co.	1.90	14.1
29	11d	do do do	1.85	7.91
30	12d	do do do	1.95	10.6
31	13d	do do do	1.89	10.8
32	14d	do do do	1.84	8.51
33	15d	do do do	1.84	9.44
34	22d	do do do	1.79	7.41
35	29d	do do do	1.74	5.76

a Measurement made by wading 100 feet below gage.
b Measurement made by wading 25 feet above gage.
c Measurement made by wading 200 feet below gage.
d Measurement made by weir a short distance above the Panther Valley Water Company's pumping station, about one half mile above the gage. The amount of pumpage was deducted from the quantity measured at the weir and the gage height at the gaging station was used.

Daily Mean Gage Height, in feet, of Little Schuylkill River, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.88	1.98	2.99	2.58	2.32	2.49	2.70	2.31	2.34	2.26	2.00	1.90
2	1.88	2.05	3.00	2.71	2.46	2.41	2.63	2.50	3.10	2.65	2.04	1.90
3	1.95	2.02	3.38	2.74	2.52	2.38	2.57	2.32	3.32	2.46	2.06	1.90
4	1.96	2.00	3.22	2.64	2.31	2.40	2.65	2.57	3.34	2.38	2.02	1.90
5	1.88	2.00	3.04	2.82	2.22	2.50	2.62	2.90	3.31	2.35	2.00	1.90
6	1.87	1.98	2.90	2.29	2.20	2.80	2.56	2.75	3.28	2.28	2.00	1.90
7	1.85	1.95	2.80	2.24	2.22	4.07	2.62	2.68	3.23	2.24	1.95	1.90
8	1.95	1.95	2.60	2.22	2.04	3.88	2.59	2.63	3.04	2.20	2.00	1.90
9	2.00	1.96	2.51	2.20	2.23	3.33	2.56	2.58	2.93	2.20	1.99	1.90
10	1.95	1.96	2.47	2.14	2.15	3.12	2.55	2.54	2.80	2.20	1.95	1.88
11	1.90	1.95	2.46	2.18	2.18	3.18	2.56	2.50	2.84	2.18	1.95	1.85
12	1.90	1.95	2.44	2.58	2.30	3.12	2.66	2.46	2.65	2.18	1.95	1.95
13	1.90	1.98	2.40	2.80	2.20	3.02	2.62	2.41	2.56	2.15	1.95	1.89
14	1.92	1.98	2.32	2.85	2.22	3.02	2.60	2.50	2.54	2.12	1.95	1.84
15	1.93	1.99	2.30	2.68	2.24	2.98	3.02	2.48	2.50	2.12	1.94	1.84
16	1.92	1.94	2.28	2.52	2.20	2.90	2.86	2.36	2.44	2.12	1.94	1.82
17	1.90	1.96	2.26	2.54	2.48	2.82	2.85	2.35	2.41	2.12	1.92	1.80
18	1.90	1.98	2.72	2.42	2.78	2.75	2.85	2.70	2.44	2.10	1.90	1.77
19	1.90	2.04	2.66	2.28	2.65	2.73	2.75	3.10	2.35	2.14	1.90	1.76
20	2.02	2.19	2.60	2.30	2.76	2.98	2.66	3.02	2.34	2.10	1.90	1.78
21	2.02	2.16	2.54	2.26	2.54	2.79	2.61	2.88	2.35	2.06	1.90	1.78
22	2.00	2.15	2.46	2.36	2.39	2.71	2.58	2.78	2.32	2.05	1.89	1.79
23	1.95	2.11	2.47	2.54	2.64	2.66	2.54	2.72	2.29	2.05	1.88	1.83
24	1.95	2.11	2.52	2.72	2.86	2.64	2.50	2.62	2.26	2.05	1.88	1.79
25	1.95	2.14	------	2.85	2.70	2.60	2.46	2.58	2.22	2.05	2.00	1.76
26	1.92	2.15	2.40	2.92	2.64	2.60	2.44	2.56	2.20	2.05	2.02	1.74
27	1.89	2.62	2.38	2.84	2.60	2.59	2.42	2.48	2.20	2.05	1.99	1.73
28	1.88	3.38	2.32	2.68	2.50	2.62	2.38	2.42	2.20	2.05	1.95	1.73
29	1.90	3.40	2.29	2.59	------	2.54	2.34	2.40	2.20	2.03	1.94	1.74
30	1.90	3.29	2.36	2.42	------	2.56	2.32	2.36	2.16	2.01	1.92	1.76
31	1.90	------	2.44	2.32	------	2.54	------	2.33	------	2.00	1.90	------

Note.—Gage height not observed Dec. 25. Stage-discharge relation Dec. 30 to Jan. 5, Jan. 11 to Feb. 1 and Feb. 17-19 affected by ice.

Daily discharge, in second-feet, of Little Schuylkill River at Tamaqua, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	21	350	65	44	142	220	88	97	75	24	12
2	11	32	350	55	240	118	200	85	400	180	30	12
3	17	27	580	44	145	109	162	91	520	133	34	12
4	18	24	400	60	88	115	200	162	550	112	27	12
5	11	24	375	90	65	145	180	300	520	100	24	12
6	10	21	300	82	60	260	162	240	520	80	24	12
7	8.8	17	260	70	65	1,110	180	220	490	70	21	12
8	17	17	180	65	30	940	180	200	385	60	24	12
9	24	18	145	60	68	550	162	180	325	60	22	12
10	17	18	136	48	50	400	162	162	280	60	17	11
11	12	17	133	32	56	460	162	145	260	56	17	8.8
12	12	17	127	36	60	400	200	133	200	56	17	17
13	12	21	115	40	60	350	180	118	162	50	17	11
14	14	21	91	40	65	350	180	145	162	44	17	8.4
15	15	22	85	38	70	350	350	139	145	44	16	8.4
16	14	16	80	32	60	300	280	112	127	44	16	7.6
17	12	18	75	28	50	260	280	100	118	44	14	7.0
18	12	21	220	28	50	240	280	220	127	40	12	6.1
19	12	30	200	34	100	240	240	400	109	48	12	5.9
20	27	58	180	40	240	350	200	350	97	40	12	6.4
21	27	52	162	55	162	260	180	300	94	34	12	6.4
22	24	50	133	80	180	220	180	260	91	32	11	6.7
23	17	42	136	60	200	200	162	220	82	32	11	8.0
24	17	42	145	40	280	200	145	180	75	32	11	6.7
25	17	48	130	32	220	180	133	180	65	32	24	5.9
26	14	56	115	30	200	180	127	162	60	32	27	5.5
27	11	180	109	28	180	180	121	139	60	32	22	5.3
28	11	580	91	32	145	180	109	121	60	32	17	5.3
29	12	580	82	32	------	162	97	115	60	29	16	5.5
30	12	520	60	30	------	162	91	103	52	26	14	5.9
31	12	------	50	28	------	162	------	94	------	24	12	------

Note.—Discharge does not include the quantity of water diverted by the Panther Valley Water Company. Discharge estimated Dec. 25, because of no gage height record, and Dec. 30 to Jan. 5, Jan. 11 to Feb. 1 and Feb. 17-19, because of ice, from weather records, study of gage height graph and comparison with similar studies for Schulykill River at Reading and Little Swatara Creek near Pine Grove.

Monthly discharge of Little Schuylkill River at Tamaqua, for the year ending Sept. 30, 1922

(Drainage area 44 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	27	8.8	14.9	0.391	0.45
November	580	16	86.8	2.01	2.24
December	580	50	182	4.16	4.80
January	90	28	46.3	1.09	1.26
February	280	30	115	2.66	2.77
March	1,110	109	299	6.84	7.89
April	350	91	184	4.18	4.66
May	400	85	176	4.00	4.61
June	550	52	209	4.75	5.30
July	180	24	55.9	1.27	1.46
August	34	11	18.5	.420	.48
September	17	5.3	8.89	.202	.23
The year	1,110	5.3	116	2.66	36.15

Note.—Discharge does not include the quantity of water diverted by the Panther Valley Water Company. Run-off does include the quantity of water diverted.

DELAWARE BASIN—STATION NO. 12

SCHUYLKILL RIVER AT READING

Location.—At concrete viaduct, Penn Street, Reading, Berks County.

Drainage Area.—900 square miles.

Records Available.—May 6, 1914, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by H. J. Kline. Elevation of gage zero 188.50 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left is low and stream begins to overflow the canal tow-path at a stage of 6.8 feet. Bed is composed of gravel. Low-water control is at a slight riffle about 700 feet below gage; may shift occasionally. Control for high stages is probably at the Pennsylvania Railroad bridge about 900 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 9.13 feet observed at 7.20 a. m. March 8 (discharge, about 18,200 second-feet); minimum, —0.75 foot at 7:30 a. m. October 8 (discharge, 157 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Diversions.—During navigation season water is diverted past the gage through the Schuylkill Navigation Company canal, which follows along the left bank.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve fairly well defined below 15,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages, when they are fair, owing to uncertain quantity of water diverted by canal.

Discharge measurements of Schuylkill River at Reading, during the year ending Sept. 30 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
47	Nov. 4	R. H. Hosmer	—0.11	406
48	July 6	H. L. Landis	1.68	1,710
49	6	H. J. McIntyre	1.63	1,650
50	Sept. 11	H. L. Landis	—0.32	312
51	11	do	—0.32	293

Daily Mean Gage Height, in feet, of Schuylkill River at Reading, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	—0.52	—0.17	3.50	0.55	—0.07	1.99	1.60	0.72	1.18	0.75	—0.12	0.02
2	—.54	.55	2.96	.19	2.61	1.89	1.88	.87	2.01	4.65	.51	—.19
3	—.39	.15	6.00	.11	4.68	1.73	1.77	.54	4.27	2.75	.59	—.32
4	—.02	—.28	4.58	.26	2.61	1.69	1.76	1.09	4.88	2.76	1.67	—.05
5	.06	—.38	3.62	.63	1.56	2.19	1.70	3.25	4.22	2.37	.60	.25
6	—.63	—.35	2.95	1.29	1.31	3.00	1.45	2.54	5.19	1.64	.22	—.22
7	—.60	—.39	2.26	.63	2.03	3.18	1.47	2.45	4.51	1.32	.05	—.38
8	—.70	—.40	2.02	.32	1.03	7.50	1.57	2.28	3.71	1.10	.04	—.36
9	—.35	—.34	1.67	.39	.81	4.98	1.43	2.18	3.23	1.48	.00	—.32
10	—.30	—.22	1.49	.46	.77	3.95	1.28	2.02	2.78	1.00	—.10	—.34
11	—.60	—.14	1.38	.22	.73	3.75	1.27	1.90	2.33	.80	—.15	—.32
12	—.43	—.28	1.20	—.12	1.45	4.23	1.66	1.86	2.33	.86	—.12	—.32
13	—.55	—.32	1.14	.11	1.53	3.75	1.33	1.68	1.70	.76	—.18	—.06
14	—.53	—.32	.98	.24	1.20	3.48	1.16	1.60	1.44	.35	—.18	—.34
15	—.56	—.32	.80	.12	1.05	3.21	2.43	1.76	1.33	.45	—.18	—.51
16	—.50	—.30	.50	.06	.83	2.81	2.46	1.52	1.06	.32	.01	—.62
17	—.51	—.25	.70	.01	.46	2.43	2.36	1.35	1.18	.10	.12	—.54
18	—.60	—.14	1.38	—.04	.49	2.11	2.47	2.05	2.23	.14	—.18	—.60
19	—.55	—.15	1.65	.21	.72	1.95	2.06	2.85	1.22	.64	—.27	—.58
20	—.27	.16	1.30	.31	2.03	2.86	1.83	3.58	.98	.41	—.32	—.50
21	.00	.48	1.19	.57	3.58	3.09	1.63	3.29	.90	.18	—.32	—.55
22	—.27	.30	.63	.96	2.82	2.63	1.43	2.97	1.10	.30	—.39	—.55
23	—.40	.20	.63	.38	3.37	2.31	1.31	2.61	.76	.15	—.46	—.50
24	—.47	.22	1.15	.01	4.27	2.05	1.21	2.37	.56	.29	—.45	—.50
25	—.25	.25	1.47	—.09	3.09	1.88	1.09	2.09	.46	.12	—.31	—.52
26	—.61	.20	.85	—.06	2.56	1.72	1.09	2.09	.43	.04	—.10	—.58
27	—.53	.28	.79	—.09	2.60	1.56	1.07	1.95	.36	.05	—.26	—.61
28	—.61	2.70	.67	—.10	2.52	1.64	.93	1.71	.32	.05	—.26	—.62
29	—.61	6.15	.63	—.07	-------	1.52	.85	1.49	.41	.18	—.28	—.61
30	—.55	4.68	.25	.03	-------	1.32	.81	1.33	.37	—.02	—.38	—.60
31	—.49	-------	.18	—.07	-------	1.44	-------	1.28	-------	—.08	—.18	-------

Daily discharge, in second- feet, of Schuylkill River at Reading, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	224	370	4,830	790	415	2,100	1,610	860	1,240	930	390	440
2	218	790	3,800	540	3,020	1,970	1,970	1,000	2,100	7,200	720	3:0
3	270	515	10,500	490	7,430	1,720	1,840	720	6,540	3,400	790	310
4	440	310	7,200	570	3,020	1,720	1,840	1,160	7,890	3,400	1,720	415
5	465	270	5,040	790	1,610	2,400	1,720	4,200	6,320	2,700	790	570
6	191	290	3,800	1,330	1,330	3,800	1,420	2,860	8,580	1,610	540	350
7	200	270	2,550	790	2,100	4,200	1,510	2,700	6,980	1,330	465	270
8	170	270	2,100	600	1,080	14,100	1,610	2,550	5,250	1,160	465	290
9	290	290	1,720	660	930	8,120	1,420	2,400	4,200	1,510	440	310
10	310	350	1,510	690	930	5,880	1,330	2,100	3,400	1,080	390	290
11	200	370	1,420	540	860	5,460	1,330	1,970	2,550	930	370	310
12	250	310	1,240	390	1,420	6,320	1,720	1,970	2,550	1,000	390	310
13	215	310	1,160	490	1,510	5,460	1,330	1,720	1,720	930	350	415
14	221	310	1,080	570	1,240	4,830	1,240	1,610	1,420	630	350	290
15	212	310	930	490	1,080	4,200	2,700	1,840	1,330	690	350	227
16	230	310	720	465	930	3,400	2,860	1,510	1,160	600	440	194
17	227	330	860	440	690	2,700	2,700	1,420	1,240	490	490	218
18	200	370	1,420	465	720	2,250	2,860	2,100	2,400	515	350	200
19	215	370	1,610	540	860	2,100	2,250	3,400	1,240	790	330	206
20	330	515	1,330	600	2,100	3,600	1,840	5,040	1,080	660	310	230
21	440	720	1,240	790	5,040	4,000	1,610	4,410	1,000	540	310	215
22	330	600	790	1,080	3,400	3,020	1,420	3,800	1,160	600	270	215
23	270	540	790	660	4,620	2,550	1,330	3,020	930	515	250	230
24	250	540	1,240	440	6,540	2,100	1,240	2,700	790	600	250	230
25	330	570	1,510	390	4,000	1,970	1,160	2,250	690	490	310	224
26	197	540	930	415	3,020	1,720	1,160	2,250	690	465	390	206
27	221	600	930	390	3,020	1,610	1,160	2,100	630	465	330	197
28	197	3,200	860	390	2,860	1,610	1,000	1,720	600	465	330	194
29	197	11,000	790	415	-------	1,510	930	1,510	660	540	310	197
30	215	7,430	570	465	-------	1,330	930	1,330	630	440	270	200
31	230	-------	540	415	-------	1,420	-------	1,330	-------	390	350	-------

Note.—Discharge does not include the water diverted past the gage through Schuylkill Navigation Company Canal. Canal was closed Nov. 1 to May 31.

Monthly discharge of Schuylkill River at Reading, for the year ending Sept. 30, 1922

(Drainage area 900 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	465	170	257	0.286	0.33
November	11,000	270	1,100	1.22	1.36
December	10,500	540	2,100	2.33	2.69
January	1,330	390	584	.649	.75
February	7,430	415	2,350	2.61	2.72
March	14,100	1,330	3,520	3.91	4.51
April	2,860	930	1,630	1.81	2.02
May	5,040	720	2,240	2.49	2.87
June	8,580	600	2,570	2.86	3.19
July	7,200	390	1,200	1.33	1.53
August	1,720	250	445	.494	.57
September	570	194	277	.308	.34
The Year	14,100	170	1,520	1.69	22.88

Note.—Discharge and run-off does not include the water diverted past the gage through Schuylkill Navigation Company Canal. Canal was closed Nov. 1 to May 31.

DELAWARE BASIN—STATION NO. 13

PERKIOMEN CREEK AT GRATERS FORD

Location.—At two-span steel highway bridge, Graters Ford, Montgomery County.

Drainage Area.—280 square miles.

Records Available.—June 11, 1914, to September 30, 1922.

Gages.—Standard chain attached to upstream side of bridge and inclined staff installed in August 1921 on left bank 1,700 feet upstream from the chain gage. Both gages are read to hundredths twice daily by C. K. Kulp. The elevation of the staff gage is 3.23 feet above that of the chain gage.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Low stages at the chain gage are affected by backwater from the dam at Ironbridge. Control for low stages at the staff gage is at a riffle about 200 feet below the gage, where the bed is composed of gravel and large stones; probably permanent. Control for medium and high stages, for both gages, is the dam at Ironbridge.

Extremes of Stage.—Chain Gage: Maximum gage height during the year, estimated from hydrograph, 7.4 feet at 8 p. m. March 20; a stage of 8.8 feet, estimated from hydrograph, was reached at midnight February 2-3, but the stage-discharge relation was affected by ice; minimum, 1.74 feet at 5 p. m. August 23; a stage of 1.04 feet was observed at 5 p. m. October 8, when the dam at Ironbridge was being repaired.

Staff Gage: Maximum gage height during the year, estimated from hydrograph, 5.6 feet at 8 p. m. March 20; a stage of 8.1 feet, estimated from hydrograph, was reached at midnight February 2-3, but the stage-discharge relation was affected by ice; minimum, 1.00 foot at 8.30 a. m. October 14.

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—Stage-discharge relation during low stages at the chain gage is affected by operation of grist mill at Ironbridge.

Discharge measurements of Perkiomen Creek at Graters Ford, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
41	Oct. 19a	H. J. McIntyre	*1.23	46.5
42	June 21	H. L. Landis	*1.44	105.
43	21	H. J. McIntyre	*1.43	101.

a Measurement made by wading 200 feet below gage.
*Referred to staff gage.

Daily Mean Gage Height, in feet, of Perkiomen Creek at Graters Ford (chain gage), for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.58	2.41	3.21	3.40	3.10	5.14	4.12	2.42	2.52	2.55	2.34	2.26
2	2.50	2.44	3.00	3.30	6.28	4.92	4.54	2.32	2.72	4.83	2.34	2.36
3	2.74	2.40	3.06	3.32	5.82	4.70	4.26	2.26	4.42	4.62	2.34	2.48
4	2.55	2.39	3.26	3.36	3.94	4.55	3.78	2.44	4.89	4.40	2.31	2.57
5	2.35	2.50	3.25	3.52	3.90	4.50	3.64	4.58	**3.37**	**4.28**	2.33	2.80
6	2.29	2.51	3.09	3.55	3.78	4.26	3.47	3.91	3.64	4.24	2.31	2.73
7	2.18	2.46	3.09	3.50	3.74	4.95	3.26	3.30	3.68	4.16	2.24	2.53
8	1.25	2.48	3.26	3.47	3.62	5.20	3.22	2.95	3.28	4.32	2.20	2.50
9	1.18	2.45	3.40	3.28	3.46	4.50	3.16	2.92	2.86	4.73	2.12	2.40
10	2.12	2.44	3.48	3.26	3.25	4.43	3.10	2.81	2.80	3.67	2.16	2.39
11	2.30	2.42	3.55	3.36	3.16	5.77	3.00	2.76	2.98	3.54	2.16	2.26
12	2.27	2.48	3.57	3.48	3.11	4.84	3.27	2.68	2.74	3.43	2.23	2.50
13	2.15	2.44	3.46	3.44	3.09	4.16	3.30	2.72	2.68	3.34	2.24	2.52
14	2.23	2.46	3.54	3.44	3.12	4.30	3.23	2.79	2.48	3.44	2.16	2.54
15	2.30	2.42	3.55	3.27	3.27	4.29	4.68	2.69	2.42	3.42	2.24	2.46
16	2.32	2.46	3.44	3.10	3.18	4.16	3.77	2.70	2.35	3.30	2.19	2.54
17	2.34	2.54	3.42	3.11	3.14	3.90	3.14	2.66	2.34	3.24	2.14	2.57
18	2.42	2.56	3.87	3.14	3.17	3.50	3.19	2.71	3.35	3.20	2.16	2.58
19	2.28	2.52	3.68	3.08	3.26	3.10	3.14	2.94	2.68	3.40	2.15	2.64
20	2.26	2.60	3.58	3.05	5.05	4.99	3.18	2.87	2.66	3.45	2.28	2.70
21	2.26	2.58	3.43	3.00	6.29	5.37	3.10	2.84	2.52	3.60	2.11	2.76
22	2.33	2.64	3.50	3.08	6.10	4.10	3.11	2.74	2.70	4.36	1.99	2.80
23	2.32	2.62	3.49	3.04	5.49	3.66	3.06	2.68	2.66	4.32	1.87	2.76
24	2.26	2.84	3.49	3.00	5.06	3.37	3.01	2.66	2.60	4.58	1.88	2.96
25	2.28	2.92	3.68	2.92	4.88	3.30	2.96	2.64	2.56	4.24	1.86	2.91
26	2.34	3.26	3.58	2.94	4.47	3.21	2.87	2.74	2.48	3.82	1.92	3.04
27	2.32	3.61	3.43	2.94	5.78	3.24	2.72	2.66	2.47	3.50	2.14	2.95
28	2.28	3.80	3.41	2.91	5.61	3.12	2.60	2.60	2.44	3.37	2.10	2.87
29	2.27	3.82	3.46	2.97	-------	3.08	2.52	2.52	2.46	3.08	2.11	2.91
30	2.42	3.52	3.42	2.99	-------	3.08	2.48	2.46	2.41	2.76	2.14	2.94
31	2.45	-------	3.49	3.05	-------	3.06	-------	2.52	-------	2.52	2.18	-------

Note.—The dam at Ironbridge was repaired on Oct. 8 and 9. Stage-discharge relation Dec. 14-16, Dec. 22 to Feb. 2 and Feb. 14-18 affected by ice.

Daily Mean Gage Height, in feet, of Perkiomen Creek at Graters Ford (Staff gage), for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.25	1.22	1.52	1.54	1.34	4.26	2.59	1.38	1.40	1.39	1.82	1.30
2	1.19	1.24	1.36	1.52	5.02	4.14	2.72	1.36	1.45	3.85	1.64	1.32
3	1.15	1.22	1.50	1.50	5.02	4.04	2.44	1.34	3.03	3.72	1.54	1.36
4	1.12	1.20	1.54	1.51	3.50	3.92	2.17	1.56	3.50	3.44	1.47	1.51
5	1.15	1.20	1.60	1.60	3.51	3.88	2.08	3.59	2.28	3.32	1.44	1.72
6	1.19	1.18	1.54	1.56	3.43	3.57	2.02	2.90	2.37	3.20	1.41	1.59
7	1.08	1.16	1.49	1.53	3.38	4.22	1.98	2.22	2.45	3.24	1.38	1.55
8	1.11	1.20	1.68	1.50	3.32	4.73	1.98	1.94	2.03	3.36	1.31	1.48
9	1.19	1.18	1.70	1.46	3.14	4.01	2.00	1.83	1.58	3.09	1.30	1.48
10	1.05	1.21	1.74	1.42	2.66	3.73	1.97	1.74	1.51	2.72	1.28	1.50
11	1.08	1.18	1.76	1.50	2.39	4.57	1.94	1.70	1.70	2.59	1.26	1.42
12	1.15	1.24	1.79	1.54	2.22	3.83	2.14	1.68	1.48	2.48	1.25	1.44
13	1.09	1.26	1.83	1.49	2.14	3.18	2.06	1.68	1.40	2.42	1.24	1.44
14	1.02	1.22	1.84	1.47	2.12	3.16	2.05	1.67	1.36	2.45	1.20	1.36
15	1.06	1.19	1.74	1.48	2.18	3.14	3.57	1.64	1.34	2.40	1.22	1.32
16	1.02	1.21	1.56	1.45	2.14	2.98	2.62	1.62	1.33	2.30	1.19	1.32
17	1.08	1.26	1.54	1.46	2.12	2.78	2.00	1.63	1.30	2.26	1.18	1.36
18	1.08	1.28	1.71	1.44	2.07	2.46	2.08	1.64	2.26	2.24	1.21	1.34
19	1.14	1.25	1.76	1.41	2.19	2.12	2.05	1.74	1.68	2.36	1.19	1.28
20	1.14	1.26	1.69	1.40	3.52	3.69	2.04	1.72	1.50	2.36	1.26	1.32
21	1.18	1.28	1.65	1.39	4.89	3.72	2.00	1.68	1.47	2.40	1.18	1.32
22	1.14	1.25	1.66	1.40	4.66	2.74	1.98	1.60	1.58	2.78	1.14	1.30
23	1.16	1.23	1.69	1.40	4.22	2.40	1.98	1.58	1.56	2.74	1.12	1.26
24	1.16	1.32	1.61	1.36	3.72	2.26	1.97	1.62	1.53	2.74	1.08	1.30
25	1.20	1.50	1.66	1.36	3.60	2.22	1.95	1.62	1.50	2.58	1.09	1.28
26	1.19	1.54	1.56	1.33	3.48	2.17	1.83	1.65	1.46	2.46	1.11	1.26
27	1.14	1.66	1.50	1.32	4.65	2.16	1.73	1.56	1.44	2.37	1.16	1.19
28	1.18	1.84	1.50	1.34	4.53	2.12	1.60	1.49	1.42	2.34	1.12	1.16
29	1.16	1.88	1.52	1.36	-------	2.06	1.47	1.42	1.38	2.26	1.09	1.12
30	1.15	1.68	1.56	1.34	-------	2.04	1.40	1.39	1.34	2.12	1.14	1.14
31	1.18	-------	1.50	1.32	-------	2.04	-------	1.38	-------	1.96	1.17	-------

Note.—Stage-discharge relation Dec. 22 to Feb. 2 and Feb. 15-17 affected by ice.

DELAWARE BASIN—STATION NO. 14

SCHUYLKILL RIVER AT CONSHOHOCKEN

Location.—At ten-span concrete highway bridge between Conshohocken and West Conshohocken, Montgomery County.

Drainage Area.—1,800 square miles.

Records Available.—June 8, 1914, to May 31, 1916, and October 18, 1921, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by O. R. Tomlinson. Elevation of gage zero 34.83 feet, United States Geological datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of fine and coarse gravel. Control is Flat Rock Dam about five miles below the gage. Stage-discharge relation is affected by use of flashboards and operation of power plant at Flat Rock Dam.

Extremes of Stage.—Maximum gage height during the period October 18 to September 30, estimated from hydrograph, 12.2 feet at 1 p. m. March 8; minimum, 2.14 feet on September 27.

Ice.—Stage-discharge relation rarely affected by ice.

Diversions.—During navigation season water is diverted past the gage through the Schuylkill Navigation Company Canal, which follows along the left bank.

Discharge measurements of Schuylkill River at Conshohocken during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
18	Oct. 18	H. J. McIntyre	2.71	473
19	19	do	2.79	378
20	Nov. 3	R. H. Hosmer	3.61	904
21	June 20	H. J. McIntyre	4.13	1,790

Daily Mean Gage Height, in feet, of Schuylkill River at Conshohocken, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	3.65	6.67	3.92	4.13	5.27	6.95	3.56	3.88	3.42	3.27	5.23
2	-------	3.28	5.87	4.22	6.85	4.98	5.72	3.24	3.95	5.14	2.87	3.76
3	-------	3.74	7.67	3.30	10.77	4.92	4.95	2.94	5.48	6.13	3.56	3.33
4	-------	3.43	7.67	3.54	7.07	5.17	4.83	3.30	7.29	5.96	3.75	3.44
5	-------	3.30	6.60	3.99	5.18	5.93	4.88	5.61	6.41	5.70	4.45	3.70
6	-------	2.99	6.01	4.33	4.65	6.69	4.75	6.38	7.24	5.19	3.88	4.03
7	-------	3.48	5.57	4.60	5.01	6.35	4.80	5.44	7.14	4.55	3.28	3.11
8	-------	3.49	5.27	3.79	4.52	9.59	5.10	4.99	6.09	4.53	3.10	3.15
9	-------	3.53	4.94	3.94	3.99	8.80	4.73	4.92	5.65	4.54	3.24	2.77
10	-------	3.28	4.78	3.86	3.98	7.32	4.57	4.79	5.33	4.45	3.21	2.83
11	-------	3.58	4.67	3.73	3.81	7.75	4.39	4.61	5.04	3.87	2.66	3.44
12	-------	3.56	4.64	3.26	4.35	8.29	4.27	4.39	4.72	3.78	2.94	3.27
13	-------	3.43	4.55	3.51	4.17	6.83	4.32	4.36	4.65	3.56	3.25	3.64
14	-------	3.59	4.41	3.21	4.77	6.61	4.28	-------	4.33	4.31	3.61	3.46
15	-------	3.15	3.99	3.87	4.30	6.36	4.35	-------	4.03	4.16	3.27	3.49
16	-------	3.29	3.38	3.40	3.84	5.86	-------	-------	3.91	3.44	2.91	3.42
17	-------	3.63	3.76	3.28	4.25	5.45	4.96	4.35	3.55	3.56	3.47	3.02
18	2.71	3.53	4.42	3.08	2.67	5.12	4.99	4.49	-------	3.30	3.48	3.28
19	2.67	3.46	4.97	3.29	3.25	4.93	4.91	4.99	4.60	3.60	3.12	3.30
20	3.22	3.61	4.91	3.63	6.25	7.70	4.55	5.58	4.14	3.58	2.83	2.87
21	3.40	4.01	4.53	3.29	8.32	7.31	4.34	5.54	3.60	3.49	3.32	3.23
22	3.52	3.56	4.24	5.09	6.57	5.91	4.16	5.26	3.80	3.07	2.93	3.09
23	3.48	3.38	3.94	4.80	6.93	5.51	4.12	4.87	4.22	4.09	2.93	2.95
24	3.18	3.55	4.26	4.14	7.64	5.28	3.98	4.65	3.69	3.83	2.70	2.97
25	3.44	3.26	5.02	3.16	6.41	5.00	3.93	4.59	3.60	3.31	2.94	3.20
26	3.42	3.74	4.78	2.61	5.61	4.76	3.16	4.44	3.22	3.14	3.19	2.85
27	3.40	3.82	4.41	3.11	6.27	4.52	3.75	4.55	3.52	3.04	3.31	2.14
28	2.94	4.20	4.05	3.09	6.14	4.61	4.06	4.28	3.28	2.96	3.41	3.02
29	2.83	9.05	3.51	2.87	-------	4.59	3.80	4.03	3.44	2.93	3.07	2.86
30	2.77	8.26	3.25	3.46	-------	4.30	3.99	3.50	3.35	3.18	3.26	3.23
31	3.44	-------	2.86	3.72	-------	4.42	-------	3.55	-------	3.06	3.22	-------

Note.—Station re-established Oct. 18, 1921. Gage height Apr. 16, May 14-16 and June 18 not observed.

DELAWARE BASIN—STATION NO. 15

BRANDYWINE CREEK AT CHADDS FORD

Location.—At two-span steel railroad bridge, Pennsylvania Railroad, Chadds Ford, Delaware County.

Drainage Area.—285 square miles.

Records Available.—August 1, 1911, to September 30, 1922.

Gages.—Standard chain attached to upstream side of bridge; read by H. W. Guest. Elevation of gage zero 150.18 feet, United States Geological Survey datum. The Sanborn water-gage recorder, installed on the upstream end of pier, is referred to the chain gage datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—The right bank is low and the stream begins to overflow a flat 700 feet wide at a stage of about 6 feet. Left bank is high and not subject to overflow. Bed is composed of mud, gravel and stones. Control is at the first of a series of low riffles, where the bed is composed of gravel, extending downstream from about 150 feet below gage; shifts occasionally.

Extremes of Discharge.—Maximum stage during the year, 8.0 feet observed at 5 p. m. February 20 (discharge, 4,930 second-feet); minimum, 0.60 foot at 6:15 p. m. September 16 and 6 p. m. September 25 (discharge, 76 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—Fluctuations in stage during low water are caused by the operation of a mill above the station.

Accuracy.—Stage-discharge relation changed February 3, 1922. Two rating curves used; the first applicable to February 2; the second since that date; both well defined between 100 and 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height, computed from chain gage readings, to rating table. Results good.

Discharge measurements of Brandywine Creek at Chadds Ford, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
37	Oct. 20	H. J. McIntyre	0.84	88.7
38	June 19	do	1.37	238

Daily Mean Gage Height, in feet, of Brandywine Creek at Chadds Ford, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.97	0.88	1.40	0.99	1.17	2.11	1.71	1.31	1.18	1.26	1.05	1.50
2	.86	1.31	1.41	.87	4.69	1.73	2.28	1.30	2.03	1.42	1.28	1.21
3	.95	1.27	1.80	.91	5.94	1.75	1.95	1.30	3.80	1.79	1.11	1.12
4	.96	1.11	1.41	.98	3.49	1.76	1.90	1.73	3.22	2.30	1.49	1.14
5	.97	1.01	1.30	1.19	2.44	2.03	1.85	3.43	2.86	1.91	1.36	1.13
6	.98	.87	1.30	1.19	2.47	2.42	1.84	2.01	3.47	1.75	1.22	1.05
7	.97	.98	1.32	1.20	2.17	3.19	-------	1.70	2.48	1.47	1.17	1.08
8	.96	.87	1.27	.91	1.32	4.51	-------	1.61	2.20	1.68	1.07	.86
9	.97	.89	1.24	.95	1.44	3.37	-------	1.54	1.97	4.19	1.03	.97
10	.93	1.02	1.24	.91	1.52	2.85	-------	1.47	1.64	2.05	1.02	.98
11	.78	1.01	1.17	1.13	1.60	2.70	-------	1.41	1.40	1.49	1.01	1.09
12	.86	.97	1.34	.92	2.03	2.54	-------	1.40	1.52	1.43	1.05	1.10
13	1.00	.98	1.21	1.21	1.79	2.20	-------	1.3.	1.46	1.5.	1.07	1.05
14	1.01	1.00	1.15	1.05	1.68	2.07	-------	1.38	1.33	2.40	1.00	1.01
15	.95	.96	1.18	1.06	1.66	2.02	-------	1.35	1.30	1.74	1.01	.95
16	.85	1.00	1.01	1.04	1.55	1.90	1.63	1.37	1.37	1.39	1.01	.78
17	.92	1.20	1.04	1.14	1.26	1.71	1.62	1.3.	1.38	1.36	1.03	.91
18	.89	1.18	1.38	1.03	1.50	1.69	1.63	2.02	1.4.	1.32	1.05	.87
19	.88	1.18	1.55	1.28	1.38	1.71	1.69	2..1	1.37	1.42	1.00	.85
20	.88	1.33	1.24	2.78	6.83	2.76	1.66	1.71	1.36	1.28	1.02	.83
21	.95	1.34	1.21	2.38	3.68	2.13	1.49	1.46	1.42	1.27	.90	.84
22	.93	1.16	1.09	2.01	2.54	1.99	1.43	1.37	1.34	1.16	.96	.84
23	.78	.97	1.10	1.38	2.55	1.95	1.42	1.43	1.30	1.24	.99	.81
24	.85	1.04	1.19	1.36	2.61	1.91	1.41	1.37	1.28	1.24	.91	.83
25	.94	1.14	1.20	1.08	2.55	1.86	1.40	1.32	1.24	1.26	1.00	.76
26	.77	1.11	1.18	1.04	2.66	1.76	1.47	1.32	1.22	1.24	.99	.89
27	.99	1.23	1.19	1.12	3.09	1.71	1.46	1.31	1.22	1..3	1.10	.88
28	.91	2.13	1.16	1.21	3.05	1.72	1.45	1.25	1.25	1.21	1.04	.84
29	.81	2.51	1.10	1.10	-------	1.73	1.42	1.23	1.52	1.11	1.06	.89
30	.71	1.77	1.08	1.17	-------	1.72	1.35	1.24	1.37	1.18	1.02	.94
31	.89	-------	1.25	1.29	-------	1.69	-------	1.20	-------	1.13	1.37	-------

Note.—Gage height Apr. 7-15 not observed.

Daily discharge, in second-feet, of Brandywine Creek at Chadds Ford, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	108	91	234	112	159	500	346	220	181	205	146	279
2	88	203	238	90	1,800	364	588	217	480	253	211	190
3	104	190	380	96	2,580	364	440	217	1,310	38.	162	165
4	110	142	238	112	1,160	382	420	364	1,010	588	276	170
5	108	116	200	165	657	480	401	1,110	868	420	235	167
6	110	96	200	165	657	634	401	459	1,160	364	193	156
7	108	110	207	168	521	1,010	420	346	680	269	179	154
8	106	90	190	96	223	1,690	500	312	542	346	151	103
9	108	93	181	108	260	1,110	400	296	440	1,610	146	126
10	100	119	181	96	279	821	360	269	329	480	138	128
11	79	116	159	148	312	774	340	250	312	276	136	156
12	88	108	214	98	480	680	320	247	279	257	146	159
13	114	110	171	171	382	542	320	244	266	279	151	146
14	110	114	154	126	346	480	340	241	241	634	133	136
15	104	112	162	129	329	459	340	232	244	364	136	122
16	87	114	116	124	296	420	329	238	238	244	136	91
17	98	168	124	151	205	346	312	238	241	235	141	112
18	93	162	227	122	279	346	329	459	250	223	141	105
19	91	162	287	194	241	346	346	500	238	253	133	102
20	91	210	181	821	3,330	821	329	346	235	211	138	98
21	104	214	171	634	1,260	521	276	247	253	208	110	100
22	100	156	136	459	680	459	257	238	229	205	124	100
23	75	108	139	227	727	440	253	257	217	199	131	100
24	87	124	165	220	727	420	250	238	211	199	112	98
25	102	151	168	134	727	401	247	223	199	205	133	89
26	78	142	162	124	774	364	265	223	193	199	131	108
27	112	178	165	145	962	346	266	220	193	196	159	107
28	96	521	156	171	915	346	263	202	202	190	143	100
29	81	680	139	139	-------	364	253	196	279	162	149	108
30	74	361	134	159	-------	346	232	199	238	181	138	119
31	93	-------	184	197	-------	346	-------	187	-------	167	238	-------

Note.—Discharge Apr. 7-15 estimated, because of no gage height record, from weather records, study of gage height graph and discharge of Bushkill Creek near Shoemakers, McMichaels Creek near Stroudsburg and Perkiomen Creek at Gratersford

Monthly discharge of Brandywine Creek at Chadds Ford, for the year ending Sept. 30, 1922

(Drainage area 285 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	116	74	97.2	0.341	0.39
November	680	90	175	.614	.68
December	380	116	186	.653	.75
January	821	90	190	.667	.77
February	3,330	159	760	2.67	2.78
March	1,690	346	546	1.92	2.21
April	588	232	338	1.19	1.33
May	1,110	187	298	1.05	1.21
June	1,310	181	292	1.38	1.54
July	1,640	162	324	1.14	1.31
August	276	110	155	.544	.63
September	279	89	129	.453	.51
The year	3,330	74	296	1.04	14.11

SUSQUEHANNA BASIN

NORTH BRANCH SUSQUEHANNA RIVER AT BINGHAMTON, N. Y.

Location.—At four-span steel highway bridge, Washington Street, Binghamton, Broome County.

Drainage Area.—2,400 square miles.

Records Available.—July 31, 1901, to December 31, 1912, and January 23, 1915, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read to half-tenths twice daily by A. L. Coleman; during high stages more frequently. Elevation of gage zero 821.49 feet, United States Geological Survey datum.

Discharge Measurements.—Owing to the stage-discharge relation being affected by backwater from the Chenango River, measurements were discontinued in 1912.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of fine and coarse gravel.

Extremes of Stage.—Maximum gage height during the year, 14.30 feet observed at 8 a. m. November 29; minimum, 1.98 feet at 8 a. m. October 3.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Binghampton, N. Y., for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.02	2.39	8.48	3.00	3.02	3.88	7.10	3.05	2.60	5.58	2.26	2.88
2	2.00	3.15	7.06	2.80	2.60	3.52	7.10	3.05	2.52	6.97	2 20	2.82
3	2.02	3.12	7.45	3.00	3.25	3.40	6.93	2.92	3.18	6.30	2.20	2.70
4	2.10	3.20	7.30	2.92	3.95	3.40	7.92	2.90	5.50	5.98	2.28	2.75
5	2.12	3.00	6.40	3.05	3.80	3.30	7.68	3.64	4.85	5.20	2.32	2.90
6	2.20	2.90	5.58	4.15	3.28	3.32	7.55	4.82	4.35	4.42	2.40	2.75
7	2.20	2.82	5.02	4.65	3.20	5.33	7.95	4.60	4.60	3.95	2.50	2.75
8	2.22	2.72	4.40	4.00	3.30	12.20	8.15	4.52	3.60	3.65	2.70	2.75
9	2.20	2.70	4.20	3.40	3.32	10.43	8.00	4.20	3.28	3.40	3.18	2.60
10	2.28	2.88	3.88	3.10	2.80	7.83	7.45	3.82	3.18	3.20	3.05	2.55
11	2.38	3.20	3.80	3.10	2.80	6.50	6.70	3.55	4.08	3.10	2.75	2.50
12	2.50	3.28	3.70	2.78	2.80	6.00	7.62	3.32	8.28	3.00	2.60	3.48
13	2.40	3.30	3.68	2.82	3.00	5.89	8.30	3.20	9.93	2.88	2.60	2.95
14	2.40	3.42	3.48	2.92	3.22	6.59	7.32	3.15	7.60	2.80	2.48	2.90
15	2.35	3.80	3.32	3.20	2.90	7.53	7.21	3.05	5.55	2.65	2.30	2.78
16	2.40	3.90	3.00	3.05	2.85	7.17	8.39	2.90	4.55	2.60	2.30	2.50
17	2.26	4.20	2.98	3.20	3.10	6.05	7.32	2.88	4.20	2.55	2.30	2.50
18	2.20	5.50	4.06	2.70	3.25	4.92	7.35	2.82	5.07	2.45	2.25	2.50
19	2.18	6.55	4.55	2.78	3.00	4.33	7.00	2.80	4.78	2.55	2.30	2.45
20	2.20	7.4[illegible]	4.12	3.08	2.90	4.76	6.25	3.56	4.72	2.52	2.30	2.40
21	3.05	7.3[illegible]	3.55	2.85	3.78	6.25	5.70	3.85	5.1[illegible]	2.5[illegible]	2.30	2 35
22	3.42	6.30	3.25	3.00	4.70	6.20	5.30	3.46	6.35	2.60	2.32	2.30
23	3.30	5.25	3.20	3 55	7.28	5.25	5.10	3.15	7.35	2.40	2.32	2.30
24	2.95	4.90	2.95	3.22	11.45	4.75	4.60	3.02	7.72	2.40	3.65	2.30
25	2.78	5.40	3.20	3.05	9.67	4.75	4.30	3.00	7.10	2.45	4.52	2.30
26	2.60	5.62	3.40	3.20	7.02	4.64	4.05	3.02	5.62	2.48	4.90	2.30
27	2.42	6.18	3.25	3.12	5.60	5.72	3.75	3.02	4.80	2.45	5.17	2.25
28	2.50	11.67	3.28	3.10	4.75	8.00	3.60	2.90	4.51	2.40	4.02	2.10
29	2.48	13.88	3.00	2.60	-------	9.03	3.45	2.80	6.92	2.35	3.65	2.10
30	2.40	11.48	5.12	3.22	-------	8.25	3.40	2.65	6.15	2.30	3.35	2.10
31	2.40	-------	3.42	3.19	-------	6.95	-------	2.65	-------	2.28	2.88	-------

NORTH BRANCH SUSQUEHANNA RIVER AT VESTAL, N. Y.

Location.—At three-span steel highway bridge between Union and Vestal, Broome County.

Drainage Area.—3,730 square miles.

Records Available.—November 13, 1918, to December 31, 1921, when the station was discontinued.

Gage.—Standard chain attached to upstream side of bridge; read to half tenths twice daily by Fred A. Michelbach; during high stages more frequently. Elevation of gage zero 800.54 feet, United States Geological Survey datum.

Channel and Control.—Right bank is high and not subject to overflow; left overflows during extremely high stages. Bed is composed of coarse gravel.

Extremes of Stage.—Maximum gage height during the period October 1 to December 31, 20.20 feet observed at 6:30 a. m. November 29: minimum, 0.85 foot at 5 p. m. October 19.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Vestal, N. Y., for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.10	1.95	11.88									
2	1.15	2.88	10.38									
3	1.20	3.32	11.5[illegible]									
4	1.30	3.32	11.23									
5	1.20	3.30	10.00									
6	.98	3.45	9.25									
7	.95	3.25	8.68									
8	.92	3.20	7.52									
9	1.20	3.40	6.80									
10	1.20	3.68	6.15									
11	1.18	3.78	5.95									
12	1.28	3.85	5.58									
13	1.22	3.85	5.30									
14	1.30	3.82	4.80									
15	1.15	3.95	4.72									
16	1.10	4.08	4.65									
17	.98	5.10	4.55									
18	.90	6.45	5.56									
19	.88	8.74	6.82									
20	1.22	11.18	5.42									
21	1.98	10.25	4.58									
22	2.08	9.18	4.38									
23	2.35	8.32	4.35									
24	1.98	7.63	4.20									
25	1.68	8.10	4.15									
26	1.45	8.28	4.10									
27	1.20	8.53	4.05									
28	1.15	14.70	4.05									
29	1.10	19.80	4.00									
30	1.30	16.48	3.82									
31	1.28		3.70									

Note.—Station discontinued December 31, 1921.

CHEMUNG RIVER AT CORNING, N. Y.

Location.—At four-span steel highway bridge, Bridge Street, Corning, Steuben County.

Drainage Area.—1,949 square miles.

Records Available.—December 1, 1909, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to tenths once daily by C. H. Voorhees, Jr.; during high stages more frequently. Elevation of gage zero 912.82 feet, United States Geological Survey datum.

Channel and Control.—River confined by dykes on both sides which overflow at gage height 23.6 feet. Bed is composed of gravel.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 11.3 feet at 11 a. m. November 28; minimum, 2.2 feet at 8 a. m. October 30.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of Chemung River at Corning, N. Y., for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	3.75	5.8	3.2	3.1	4.0	7.05	3.4	2.8	4.2	2.4	3.0
2	2.4	7.35	5.5	3.2	3.2	3.7	6.25	3.2	3.1	4.85	2.6	2.9
3	2.4	5.75	6.25	3.1	3.6	3.4	6.6	3.1	7.85	4.45	2.6	2.7
4	2.4	5.6	5.5	3.2	4.2	3.2	8.1	3.2	6.65	5.05	2.7	3.4
5	2.4	5.0	4.6	3.6	3.9	3.4	7.4	4.0	5.35	4.4	2.7	3.95
6	2.5	3.95	4.4	5.25	3.6	3.8	6.4	5.0	5.0	3.8	2.6	3.2
7	2.4	3.4	4.1	4.2	3.6	8.0	5.9	4.3	4.8	3.5	2.6	3.0
8	2.4	3.3	3.9	3.85	3.5	8.2	5.7	4.2	4.05	3.3	3.3	3.0
9	2.4	2.9	3.8	3.35	3.4	5.9	5.6	3.9	3.8	3.1	3.95	2.8
10	2.4	2.9	3.7	3.4	3.4	5.5	5.55	3.7	3.75	3.0	3.1	2.8
11	2.4	3.1	3.5	3.3	3.4	5.2	5 4	3.45	4.7	3.0	2.8	2.7
12	2.3	3.9	3.6	3.1	4.7	5.5	5.9	3.15	7.8	2.9	2.9	2.9
13	2.3	3.8	3.4	3.1	4.4	7.1	5.3	2.9	5.5	2.9	2.7	3.75
14	2.3	3.6	3.5	3.4	3.8	8.7	5.0	2.9	4.6	2.9	2.6	3.4
15	2.3	3.6	3.2	3.4	3.6	7.45	5.7	2.9	4.15	2.8	2.6	3.1
16	2.3	3.7	3.0	3.4	3.5	6.2	5.6	2.9	3.75	2.8	2.6	3.0
17	2.3	4.9	3.2	3.4	3.4	5.3	5.6	2.9	3.7	2.8	2.5	3.0
18	2.3	6.05	3.5	3.2	3.2	5.2	6.9	2.9	6.3	2.8	2.5	2.9
19	2.3	5.4	4.6	3.1	3.2	4.7	5.6	3.35	5.2	2.8	2.5	2.9
20	2.4	5.4	3.8	3.3	4.6	4.5	5.3	3.85	4.2	2.8	2.5	2.7
21	2.7	4.8	3.8	3.8	5.85	4.4	5.0	3.5	4.1	2.7	2.4	2.7
22	2.6	4.4	3.6	3.6	5.45	4.2	4.6	3.4	6.2	2.7	2.4	2.6
23	2.5	4.0	3.5	3.5	8.9	3.9	4.4	3.2	5.7	2.7	2.4	2.6
24	2 4	4.05	3.5	3.5	8.2	3.9	4.1	3.0	4.45	2.7	3.0	2.6
25	2.4	4.9	3.4	3.3	5.8	3.9	3.9	3 0	3.9	2.7	3.5	2.5
26	2.4	4.5	3 4	3.3	5.3	4.05	3.8	3.5	3.75	2.7	3.7	2.5
27	[illegible]	5.55	3.4	3.3	4.7	5.7	3.7	3.95	4.1	2.7	3.5	2.4
28	2.3	10.2	3.5	3.2	4.4	8.05	3.5	3.0	6.45	2.6	3.2	2.4
29	2.3	8.4	3.4	3.2	-------	7.15	3.4	2.9	5.1	2.6	3.0	2.3
30	2.2	6.55	3.4	3.2	-------	5.95	3.4	2.9	4.8	2.5	3.0	2.3
31	2.3	-------	3.2	3.2	-------	5.85	-------	2.8	-------	2.5	3.0	-------

Note.—Stage-discharge relation Dec. 23 to Jan. 6 and Jan. 12 to Feb. 21 affected by ice.

SUSQUEHANNA BASIN—STATION NO. 4

NORTH BRANCH SUSQUEHANNA RIVER AT TOWANDA

Location.—At four-span steel highway bridge, Bridge Street, Towanda, Bradford County.

Drainage Area.—7,770 square miles.

Records Available.—December 1, 1892, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Hiram E. Bull. Elevation of gage zero 693.4 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Control is at a riffle extending downstream from right end of bridge to island and from left side of island to left bank; changed during heavy ice flow of March 1920.

Extremes of discharge.—Maximum stage during the year, estimated from hydrograph, 15.6 feet at 5 a. m. November 29 (discharge, 104,000 second-feet); minimum, 0.90 foot from October 1 to 6 (discharge, 1,260 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined between 890 and 20,000 second-feet and well defined from 20,000 to 167,000 second-feet. Gage read twice daily to quarter tenths October 1 to April 30, and to half tenths since that date; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of North Branch Susquehanna River at Towanda, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
28	July 10	H. L. Landis	2.87	6,840
29	11	H. J. McIntyre	2.72	6,000
30	Aug. 24	H. L. Landis	1.72	2,910

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Towanda, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.90	1.84	9.39	3.38	3.84	3.95	7.47	2.72	1.84	5.20	1.31	2.52
2	.90	2.19	6.78	3.38	3.83	3.55	7.90	2.58	1.88	6.70	1.38	2.45
3	.90	3.59	7.29	3.53	4.03	3.20	7.08	2.46	4.11	6.88	1.42	2.28
4	.90	3.24	6.82	3.28	4.78	3.18	8.49	2.40	6.98	7.20	1.48	2.15
5	.90	2.74	6.04	3.38	5.78	3.05	9.10	3.04	5.50	5.62	1.52	2.02
6	.90	2.53	5.19	5.27	5.48	3.22	7.81	4.04	4.40	4.52	1.62	2.68
7	.97	2.39	4.49	5.42	5.03	5.81	7.35	4.25	4.25	3.92	1.65	2.38
8	1.05	2.26	4.04	4.82	4.95	12.47	7.35	4.12	3.68	3.42	1.71	2.28
9	1.03	2.18	3.79	4.15	4.71	10.83	7.20	3.85	3.18	3.12	2.60	2.15
10	1.03	2.16	3.42	3.51	4.40	7.99	6.90	3.48	3.20	2.90	2.60	1.95
11	1.05	2.94	3.22	3.09	4.20	6.89	6.55	3.15	3.20	2.70	2.20	1.82
12	1.05	3.14	3.24	3.88	4.83	7.05	6.69	2.80	6.40	2.52	1.90	2.27
13	1.05	3.00	3.16	3.93	4.88	6.75	7.20	2.70	8.88	2.35	1.75	2.45
14	1.20	2.92	3.09	3.88	4.62	7.00	6.85	2.55	7.49	2.20	1.64	2.72
15	1.35	2.90	2.74	3.83	4.42	8.15	6.56	2.44	5.60	2.08	1.51	2.40
16	1.25	3.66	2.49	4.03	4.08	7.65	7.00	2.34	4.25	2.09	1.44	2.15
17	1.25	3.40	2.42	4.78	3.89	6.25	7.08	2.20	3.03	1.92	1.36	2.00
18	1.15	4.34	2.99	4.78	3.73	5.08	7.30	2.19	6.20	1.88	1.34	1.88
19	1.10	5.84	4.39	4.83	3.69	4.39	7.08	2.19	5.09	1.95	1.36	1.78
20	1.15	5.94	3.94	4.53	3.95	4.19	6.00	2.68	4.54	1.90	1.55	1.68
21	1.60	6.59	3.24	5.08	5.85	4.85	5.30	3.25	4.08	1.78	1.58	1.60
22	2.22	5.69	2.44	4.58	5.90	5.60	4.99	3.09	6.90	1.69	1.59	1.58
23	2.43	4.79	4.04	4.73	8.07	4.99	4.58	2.66	7.20	1.60	1.49	1.50
24	2.23	4.26	4.04	4.63	11.24	4.28	4.25	2.48	6.75	1.67	2.10	1.40
25	2.00	4.59	3.28	4.28	10.00	4.25	3.95	2.39	6.05	1.66	5.19	1.35
26	1.83	4.79	3.63	4.08	7.28	4.35	3.68	2.35	5.08	1.66	4.25	1.31
27	1.63	5.09	3.48	3.93	5.55	4.84	3.42	2.64	4.28	1.62	5.13	1.39
28	1.47	11.38	3.18	3.93	4.55	7.56	3.20	2.46	5.49	1.54	4.00	1.25
29	1.42	14.91	3.53	3.93	-------	8.79	3.10	2.25	6.70	1.46	3.39	1.20
30	1.37	12.11	3.58	3.88	-------	8.20	2.88	2.05	6.10	1.42	3.00	1.15
31	1.25	-------	3.18	3.85	-------	7.00	-------	1.90	-------	1.36	2.72	-------

Note.—Stage-discharge relation Dec. 23 to Jan. 6 and Jan. 12 to Feb. 22 affected by ice.

Daily discharge, in second-feet, of North Branch Susquehanna River at Towanda, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,260	2,040	49,000	3,000	2,800	13,500	35,400	6,470	3,290	21,300	1,930	5 5 0
2	1,260	4,410	30,800	2,800	3,200	11,200	38,200	6,000	3,440	30,200	2,140	5,360
3	1,260	11,200	34,100	2,800	4,400	9,050	32,800	5,360	14,100	31,500	2,140	4,770
4	1,260	9,050	29,600	2,800	7,000	9,050	42,400	5,150	32,200	33,500	2,200	4,270
5	1,260	6,470	25,800	3,800	8,500	8,010	46,800	8,010	22,600	23,300	2,360	7,990
6	1,260	5,560	20,700	10,000	7,500	9,050	37,500	13,500	15,900	16,500	2,400	6,470
7	1,340	5,150	16,500	22,000	6,500	24,500	34,800	14,700	14,700	12,900	2,730	5,150
8	1,490	4,590	13,500	18,300	6,500	73,400	34,800	14,100	11,800	10,100	2,860	5,150
9	1,490	4,410	12,300	14,700	6,000	59,600	33,500	12,300	9,050	8,530	6,000	4,240
10	1,490	4,240	10,100	10,600	5,500	38,200	31,500	10,600	9,050	7,490	6,000	3,600
11	1,490	7,490	9,600	8,010	5,500	30,800	29,600	9,050	9,600	6,470	4,770	3,140
12	1,490	8,530	9,050	5,000	7,000	32,200	29,600	7,490	28,900	5,560	3,750	4,590
13	1,490	8,010	9,050	4,000	7,500	30,800	34,100	6,470	45,300	4,960	3,090	10,100
14	1,930	7,490	8,530	3,200	7,000	38,200	30,800	6,000	35,400	4,410	2,730	6,470
15	2,040	8,010	6,470	2,800	6,000	40,300	29,600	5,360	23,300	4,070	2,360	5,150
16	1,840	11,800	5,560	2,800	5,000	36,100	28,200	4,960	15,900	3,750	2,250	4,240
17	1,840	10,600	5,150	3,200	4,600	27,000	32,800	4,410	12,900	3,440	2,040	3,750
18	1,600	15,300	7,490	3,600	4,400	20,100	34,100	4,070	27,000	3,440	2,040	3,440
19	1,570	24,500	15,900	4,000	4,400	15,300	32,800	4,070	19,500	3,600	2,040	3,140
20	1,600	25,100	12,900	4,400	5,000	14,100	25,800	6,470	16,500	3,440	2,480	2,860
21	2,600	28,900	9,050	4,800	9,000	18,300	21,300	10,100	14,100	3,140	2,600	2,600
22	4,590	23,900	5,360	4,800	19,000	23,300	18,900	8,010	27,600	2,900	2,360	2,600
23	5,360	18,300	4,600	4,800	39,600	18,300	17,100	6,470	33,500	2,600	2,140	2,360
24	4,590	15,300	4,400	4,200	66,800	15,300	14,700	5,560	30,800	2,600	4,410	2,140
25	3,750	17,100	4,800	4,000	54,300	14,700	13,500	4,770	25,800	2,730	22,000	2,040
26	3,290	18,300	4,800	3,800	34,100	15,900	11,800	4,960	20,100	2,730	15,900	1 9 0
27	2,730	19,500	4,800	3,400	23,300	18,900	10,100	6,000	15,300	2,600	20,100	1 9 0
28	2,250	64,400	4,400	3,200	17,100	36,100	9,050	5,360	22,000	2,480	13,500	1,840
29	2,250	96,200	4,000	3,000	-------	43,800	8,530	4,590	30,200	2,350	9,600	1,7 0
30	2,040	70,000	3,400	2,800	-------	40,300	7,490	3,910	26,400	2,140	8,010	1,660
31	2,040	-------	3,200	2,800	-------	32,200	-------	3,440	-------	2,040	6,470	-------

Note.—Discharge Dec. 23 to Jan. 6 and Jan. 12 to Feb. 22 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for North Branch Susquehanna River at Wilkes-Barre.

Monthly discharge of North Branch Susquehanna River at Towanda, for the year ending Sept. 30, 1922

(Drainage area 7,770 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5,360	1,260	2,120	0.273	0.31
November	96,200	2,040	18,500	2.38	2.66
December	49,000	3,200	12,400	1.60	1.84
January	22,000	2,800	5,590	.719	.83
February	66,800	2,800	13,500	1.74	1.81
March	73,400	8,010	26,400	3.40	3.92
April	46,800	7,490	27,300	3.51	3.92
May	14,700	3,440	7,020	.904	1.04
June	45,300	3,290	20,500	2.64	2.94
July	33,500	2,040	8,590	1.11	1.28
August	22,000	1,930	5,340	.687	.79
September	10,100	1,660	3,990	.514	.57
The Year	96,200	1,260	12,500	1.61	21.91

SUSQUEHANNA BASIN—STATION NO. 5

TOWANDA CREEK NEAR MONROETON

Location.—At single-span steel highway bridge about one and a half miles southwest of Monroeton, Bradford County.

Drainage Area.—218 square miles.

Records Available.—January 30, 1914, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Leon D. Pepper.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Neither bank is subject to overflow. Bed is composed of coarse gravel. Control consists of the foundation timbers of an old wooden dam and a gravel bar which probably shifts.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.6 feet at 8 p. m. March 7 (discharge, about 13,700 second-feet); minimum, 1.78 feet at 5 p. m. September 30 (discharge, 13 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 10 and 500 second-feet and fairly well defined from 500 to 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

Discharge measurements of Towanda Creek near Monroeton, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
26	July 10a	H. J. McIntyre	2.32	96.1
27	Aug. 24b	H. L. Landis	1.84	14.9

a Measurement made by wading at gage.
b Measurement made by wading 900 feet above gage.

Daily Mean Gage Height, in feet, of Towanda Creek near Monroeton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.91	2.04	3.64	2.49	2.80	2.78	3.84	2.44	2.23	2.54	2.02	1.88
2	1.86	2.83	3.72	2.48	2.90	2.79	3.39	2.41	3.10	3.38	2.20	1.87
3	1.95	2.60	4.49	2.57	3.38	2.73	3.26	2.38	5.76	3.14	2.26	1.90
4	2.00	2.45	3.74	2.72	3.01	2.67	3.77	2.49	4.56	3.20	2.18	1.91
5	1.99	2.41	3.38	2.86	2.98	2.67	3.53	3.83	3.86	2.90	2.12	1.92
6	1.88	2.34	3.18	3.03	2.94	3.00	3.33	3.51	3.67	2.72	2.08	1.89
7	1.90	2.30	3.01	2.64	3.00	5.02	3.30	3.37	3.50	2.59	2.06	1.87
8	1.94	2.30	2.88	2.47	2.82	4.65	3.15	3.08	3.13	2.48	2.20	1.84
9	2.04	2.28	2.80	2.54	2.78	3.72	3.09	2.93	2.92	2.42	2.18	1.83
10	2.08	2.36	2.74	2.48	2.69	3.47	3.06	2.83	2.80	2.36	2.08	1.82
11	2.00	2.44	2.71	2.43	2.76	3.86	3.06	2.74	2.80	2.30	2.01	1.82
12	2.03	2.41	2.70	2.52	3.05	3.75	3.30	2.67	3.18	2.25	1.99	2.37
13	2.01	2.39	2.69	2.54	2.90	3.63	3.16	2.61	2.82	2.20	1.96	2.23
14	2.01	2.44	2.60	2.59	2.64	3.75	3.10	2.54	2.65	2.16	1.94	2.08
15	1.94	2.48	2.56	2.67	2.58	3.73	3.86	2.52	2.54	2.12	1.90	2.02
16	1.90	2.50	2.44	2.67	2.61	3.51	3.44	2.46	2.48	2.10	1.90	1.94
17	1.94	2.54	2.54	2.69	2.60	3.23	3.39	2.41	2.46	2.08	1.88	1.91
18	1.90	3.05	3.87	2.67	2.62	3.04	3.91	2.49	2.72	2.12	1.88	1.90
19	1.96	2.86	3.26	2.69	2.62	2.94	3.40	3.21	2.60	2.28	1.95	1.87
20	2.12	3.02	2.98	2.69	3.27	2.92	3.26	2.95	2.48	2.18	2.00	1.87
21	2.39	2.86	2.89	2.75	3.74	2.89	3.08	2.75	2.66	2.07	1.95	1.88
22	2.25	2.80	2.77	2.74	4.00	2.80	2.94	2.67	3.02	2.02	1.87	1.86
23	2.20	2.67	2.77	2.66	5.13	2.71	2.88	2.57	2.74	2.00	1.86	1.85
24	2.16	2.68	2.75	2.69	4.18	2.73	2.78	2.51	2.58	1.99	1.85	1.84
25	2.08	2.68	2.74	2.75	3.62	2.73	2.71	2.49	2.48	2.00	1.86	1.82
26	2.06	2.64	2.57	2.75	3.18	2.97	2.68	2.55	2.39	1.98	2.04	1.82
27	2.04	3.95	2.59	2.73	3.04	3.27	2.64	2.46	2.36	1.98	1.96	1.83
28	1.99	5.24	2.57	2.82	2.94	4.03	2.58	2.41	2.32	2.00	1.94	1.81
29	2.00	4.80	2.50	2.85	-------	3.70	2.50	2.36	2.32	1.96	1.92	1.80
30	2.01	3.96	2.47	2.85	-------	3.35	2.48	2.31	2.39	1.93	1.90	1.79
31	2.00	-------	2.51	2.82	-------	3.31	-------	2.27	-------	1.90	1.88	-------

Note.—Stage-discharge relation Jan. 12 to Feb. 21 affected by ice.

Daily discharge, in second-feet, of Towanda Creek near Monroeton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	25	985	125	100	259	1,220	108	56	144	22	15
2	15	288	1,040	121	180	264	710	98	465	701	50	15
3	18	167	2,280	155	320	232	591	90	5,450	495	62	16
4	20	112	1,100	226	260	201	1,100	125	2,380	540	46	16
5	20	98	701	306	240	201	877	1,220	1,220	330	36	17
6	15	80	525	416	220	395	654	825	985	226	30	16
7	16	70	402	186	240	3,380	625	692	825	163	27	15
8	18	70	318	118	180	2,580	502	451	488	121	50	14
9	25	66	270	144	150	1,040	458	350	343	102	46	14
10	30	85	237	121	140	794	437	288	270	85	30	14
11	20	108	220	105	160	1,220	437	237	270	70	21	14
12	24	98	215	95	200	1,100	625	201	525	60	20	88
13	21	92	210	85	130	985	510	172	282	50	18	56
14	21	108	167	80	95	1,100	465	144	191	43	18	30
15	18	121	151	80	90	1,100	1,220	136	144	36	16	22
16	16	128	108	80	90	825	762	115	121	32	16	18
17	18	144	144	90	90	566	710	98	115	30	15	16
18	16	430	1,220	100	95	423	1,290	125	226	36	15	16
19	18	306	591	110	110	356	720	548	167	66	18	15
20	36	409	382	120	170	343	591	362	121	46	20	15
21	92	306	324	120	400	324	451	242	196	28	18	15
22	60	270	254	120	1,430	270	356	201	409	22	15	15
23	50	201	254	130	3,730	220	318	155	237	20	15	14
24	43	205	242	130	1,740	232	259	132	159	20	14	14
25	30	205	237	130	930	232	220	125	121	20	15	14
26	27	186	155	120	525	376	205	148	92	19	25	14
27	25	1,360	163	120	423	599	186	115	85	19	18	14
28	20	4,000	155	110	356	1,500	159	98	75	20	18	13
29	20	2,910	128	100	-------	1,040	128	85	75	18	17	13
30	21	1,360	118	95	-------	672	121	72	92	17	16	13
31	20	-------	132	95	-------	634	-------	64	-------	16	15	-------

Note.—Discharge Jan. 12 to Feb. 21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lycoming Creek near Trout Run and North Branch Susquehanna River at Towanda.

Monthly discharge of Towanda Creek near Monroeton, for the year ending Sept. 30, 1922

(Drainage area 218 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	92	15	26.1	0.120	0.14
November	4,000	25	467	2.14	2.39
December	2,280	108	433	1.99	2.29
January	416	80	133	.610	.70
February	3,730	90	457	2.10	2.19
March	3,380	201	757	3.47	4.00
April	1,290	121	564	2.59	2.80
May	1,220	64	252	1.16	1.34
June	5,450	56	540	2.48	2.77
July	701	16	116	.532	.61
August	62	14	24.6	.113	.13
September	88	13	19.4	.089	.10
The Year	**5,450**	**13**	**314**	**1.44**	**19.55**

SUSQUEHANNA BASIN—STATION NO. 6

TUNKHANNOCK CREEK AT DIXON

Location.—At single-span steel highway bridge, about two miles east of Tunkhannock, at Dixon, Wyoming County.

Drainage Area.—393 square miles.

Records Available.—January 28, 1914, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by N. L. Kneller.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The right bank is high, steep, and does not overflow; the left is low but not subject to overflow. Bed is composed of coarse gravel. Control is at a riffle, where the bed is composed of boulders, about 300 feet below gage; permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 12.0 feet at 6 a. m. June 18 (discharge, about 16,000 second-feet); minimum, 0.90 foot from 5 p. m. September 27 to 5 p. m. September 28 and on September 30 (discharge, 27 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 30 and 4,000 second-feet. Gage read to half tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Tunkhannock Creek at Dixon during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
27	July 11	H. L. Landis	2.24	321
28	Aug. 24	H. J. McIntyre,	1.36	69.5

Daily Mean Gage Height, in feet, of Tunkhannock Creek at Dixon, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.18	1.50	4.38	1.78	1.75	2.20	4.21	1.85	1.48	4.45	1.42	1.38
2	1.15	1.82	4.02	1.70	2.12	2.35	3.78	1.80	1.65	5.73	1.88	1.30
3	1.30	1.92	5.50	1.78	3.40	2.22	3.58	1.80	2.68	5.31	2.00	1.30
4	1.80	1.85	4.20	1.78	2.85	2.12	4.54	1.88	4.15	4.08	1.88	1.30
5	1.75	1.78	3.72	3.00	2.35	2.32	4.40	3.09	3.15	3.52	1.78	1.35
6	1.62	1.75	3.38	3.05	2.32	2.32	4.05	2.80	3.82	3.15	1.65	1.40
7	1.58	1.70	3.10	2.42	2.28	4.98	3.92	2.78	3.25	2.82	1.58	1.35
8	1.65	1.68	2.88	2.08	2.08	6.12	3.80	2.60	2.80	2.58	1.92	1.32
9	1.92	1.70	2.60	2.12	2.00	4.10	3.60	2.35	2.55	2.58	1.95	1.28
10	1.88	1.68	2.58	2.02	2.00	3.80	3.35	2.22	2.52	2.35	1.75	1.25
11	1.82	1.70	2.52	2.05	1.95	4.48	3.18	2.12	2.45	2.20	1.62	1.22
12	2.15	1.82	2.52	1.85	2.12	4.60	5.02	2.00	2.82	2.08	1.65	1.28
13	2.20	2.02	2.48	2.10	2.00	4.30	4.02	1.98	2.30	1.98	1.52	1.35
14	1.98	1.88	2.32	2.10	1.92	4.42	3.62	1.92	2.08	1.85	1.50	1.32
15	1.82	2.25	2.15	2.05	1.90	4.15	5.00	1.88	1.98	1.78	1.48	1.30
16	1.70	2.32	1.95	1.95	1.88	3.65	4.15	1.82	2.00	1.75	1.42	1.25
17	1.68	2.25	2.10	1.88	1.78	3.20	3.75	1.75	2.98	1.72	1.40	1.20
18	1.60	2.72	3.30	1.88	1.78	2.85	3.82	1.75	8.60	1.75	1.40	1.15
19	1.60	2.72	2.98	1.92	1.72	2.65	3.40	2.10	5.00	1.75	1.45	1.22
20	1.85	3.55	2.52	2.00	3.30	3.55	3.18	2.42	4.05	1.68	1.58	1.22
21	2.40	3.25	2.40	2.08	4.35	3.75	2.85	2.08	3.75	1.58	1.48	1.20
22	2.22	2.85	2.02	1.92	3.52	3.20	2.70	1.98	4.68	1.48	1.40	1.15
23	1.98	2.72	2.15	1.92	4.65	2.85	2.58	1.92	3.92	1.58	1.38	1.10
24	1.85	2.60	2.25	1.85	4.68	2.80	2.45	1.80	3.28	2.39	1.40	1.10
25	1.80	2.78	2.35	1.88	3.45	2.70	2.32	1.72	2.95	1.92	1.42	1.05
26	1.78	2.52	2.08	1.82	3.08	2.82	2.25	1.88	2.70	1.75	1.72	.98
27	1.68	3.20	2.02	1.75	2.98	3.08	2.20	1.78	2.50	1.62	1.85	.92
28	1.62	7.20	1.98	1.75	2.68	4.30	2.12	1.68	2.38	1.62	1.70	.90
29	1.58	7.50	1.88	1.75	-------	4.08	2.00	1.68	5.10	1.62	1.65	.95
30	1.52	5.35	1.70	1.80	-------	3.62	1.98	1.52	3.95	1.48	1.60	.90
31	1.52	-------	1.92	1.75	-------	3.62	-------	1.52	-------	1.40	1.48	-------

Note.—Stage-discharge relation Feb. 20 and 21 affected by ice.

Daily discharge, in second-feet, of Tunkhannock Creek at Dixon, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	90	2,120	162	152	345	1,900	188	87	2,120	76	70
2	44	177	1,700	135	295	422	1,500	169	122	3,710	200	59
3	59	216	3,430	162	1,150	345	1,320	169	630	3,170	250	59
4	169	188	1,900	162	735	295	2,280	200	1,900	1,800	200	59
5	152	162	1,410	840	422	395	2,120	913	950	1,230	162	66
6	115	152	1,150	875	395	395	1,700	700	1,500	950	122	73
7	106	135	910	450	395	2,800	1,600	700	1,030	700	106	66
8	122	130	770	295	295	4,280	1,500	570	700	570	216	62
9	216	135	570	295	250	1,800	1,320	422	540	570	229	57
10	200	130	570	250	250	1,500	1,110	345	510	422	152	54
11	177	135	510	272	229	2,230	990	295	480	345	115	50
12	320	177	510	188	295	2,340	2,800	250	700	295	122	57
13	345	250	510	295	250	2,010	1,700	242	395	242	94	66
14	242	200	395	295	216	2,120	1,320	216	295	188	90	62
15	177	370	320	272	208	1,900	2,800	200	242	162	87	59
16	135	395	229	229	200	1,320	1,900	177	250	152	76	54
17	130	370	295	200	162	990	1,500	152	840	142	73	48
18	110	630	1,070	200	162	735	1,500	152	8,450	152	73	44
19	110	630	840	216	142	600	1,150	295	2,800	152	82	50
20	188	1,320	510	250	200	1,320	990	450	1,700	130	106	50
21	450	1,030	450	295	600	1,500	735	295	1,500	106	87	48
22	345	735	250	216	1,230	990	630	242	2,450	87	73	44
23	242	630	320	216	2,340	735	570	216	1,600	106	70	39
24	188	570	370	188	2,450	700	480	169	1,070	450	73	39
25	169	700	422	200	1,190	630	395	142	805	216	76	36
26	162	510	295	177	910	700	370	200	630	152	142	31
27	130	990	250	152	840	910	345	162	510	115	188	28
28	115	5,950	242	152	630	2,010	295	130	450	115	135	27
29	106	6,450	200	152	-------	1,800	250	130	2,920	115	122	29
30	94	3,300	135	169	-------	1,320	242	94	1,700	87	110	27
31	94	-------	216	152	-------	1,320	-------	94	-------	73	87	-------

Note.—Discharge Feb. 20 and 21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Towanda Creek near Monroeton **and Lackawanna River at Moosic.**

Monthly discharge of Tunkhannock Creek at Dixon, for the year ending Sept. 30, 1922
(Drainage area 393 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	450	44	170	0.433	0.50
November	6,450	90	895	2.28	2.54
December	3,430	135	738	1.88	2.17
January	875	135	262	.667	.77
February	2,450	142	593	1.51	1.57
March	4,280	295	1,310	3.33	3.84
April	2,800	242	1,240	3.16	3.53
May	910	94	260	.662	.76
June	8,450	87	1,260	3.21	3.58
July	3,710	73	607	1.54	1.78
August	250	70	122	.310	.36
September	73	27	50.4	.128	.14
The Year	8,450	27	625	1.59	21.54

SUSQUEHANNA BASIN—STATION NO. 7

LACKAWANNA RIVER AT MOOSIC

Location.—At single-span steel highway bridge, River Street or Moosic Road, Moosic, Lackawanna County.

Drainage Area.—265 square miles.

Records Available.—August 8, 1913, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Nelson B. Ross and Mrs. Margaret Ross.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of culm and rocks . Control for low stages is at a slight riffle about 50 feet below gage; for medium and high stages is at a pronounced riffle about 1,000 feet downstream; occasionally shifting.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.6 feet at midnight November 28-29 (discharge, 5,380 second-feet); minimum, 1.78 feet at 5 p. m. September 24 (discharge, 76 second-feet).

Ice.—Stage-discharge relation rarely affected by ice.

Accuracy.—Stage-discharge relation probably permanent throughout the year. Rating curve fairly well defined between 100 and 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Lackawanna River at Moosic, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
37	July 7	H. L. Landis	3.00	673
38	Aug. 26	H. J. McIntyre	2.38	340

Daily Mean Gage Height, in feet, of Lackawanna River at Moosic, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.94	2.04	3.94	2.38	2.19	2.62	3.41	2.40	2.20	5.30	2.17	2.02
2	1.90	2.39	3.79	2.22	3.01	2.56	3.20	2.36	2.29	5.55	2.63	2.13
3	2.08	2.32	4.78	2.18	2.75	2.53	3.14	2.37	3.80	4.85	2.45	2.12
4	2.13	2.26	4.02	2.30	2.58	2.49	3.70	2.78	4.10	4.00	2.40	2.19
5	2.02	2.22	3.60	2.62	2.53	2.60	3.62	3.29	3.57	3.64	2.35	2.11
6	2.00	2.20	3.40	2.59	2.51	2.86	3.60	2.95	3.31	3.34	2.32	2.11
7	1.96	2.20	3.10	2.42	2.38	3.90	3.66	2.96	3.10	3.07	2.29	2.10
8	2.15	2.16	2.92	2.32	2.31	4.99	3.25	2.76	2.76	2.86	2.34	2.06
9	2.05	2.18	2.78	2.28	2.26	4.18	3.40	2.69	2.67	2.81	2.32	2.01
10	2.01	2.20	2.75	2.28	2.28	3.73	3.40	2.62	2.56	2.69	2.22	1.91
11	2.02	2.19	2.75	2.28	2.34	3.94	3.42	2.54	2.68	2.55	2.24	1.95
12	2.22	2.26	2.72	2.28	2.31	3.79	4.16	2.57	2.78	2.46	2.22	2.13
13	2.14	2.18	2.62	2.22	2.30	3.62	3.95	2.54	2.58	2.42	2.12	1.99
14	2.06	2.16	2.54	2.21	2.28	3.75	3.62	2.37	2.49	2.39	2.14	1.95
15	2.14	2.32	2.42	2.21	2.29	3.74	5.03	2.31	2.46	2.34	2.17	1.91
16	2.10	2.35	2.36	2.16	2.24	3.53	4.36	2.30	2.45	2.32	2.14	1.90
17	1.99	2.33	2.28	2.15	2.16	3.25	3.88	2.28	2.56	2.34	2.14	1.90
18	2.00	2.48	2.95	2.17	2.21	3.02	3.82	2.29	5.56	2.44	2.13	1.95
19	2.00	2.42	2.79	2.22	2.24	2.96	3.60	3.02	4.62	2.38	2.14	1.94
20	2.26	3.00	2.65	2.27	2.82	3.42	3.22	3.15	3.62	2.32	2.06	1.92
21	2.24	2.82	2.60	2.28	2.88	3.38	3.15	2.84	3.38	2.29	2.08	1.90
22	2.12	2.76	2.48	2.28	2.95	3.08	3.02	2.70	3.34	2.28	2.10	1.92
23	2.14	2.62	2.39	2.19	3.75	2.92	2.92	2.62	3.29	2.22	2.10	1.88
24	2.10	2.60	2.50	2.18	4.52	2.84	2.78	2.52	3.08	2.42	2.09	1.79
25	2.06	2.58	2.48	2.12	3.55	2.82	2.75	2.52	2.86	2.25	2.16	1.89
26	2.08	2.61	2.38	2.11	3.22	2.86	2.66	2.51	2.72	2.22	2.32	1.88
27	2.08	2.98	2.41	2.10	3.00	2.96	2.62	2.22	2.66	2.22	2.22	1.88
28	2.02	5.35	2.36	2.10	2.95	3.51	2.65	2.30	2.62	2.54	2.11	1.90
29	2.00	6.10	2.31	2.11	-------	3.86	2.49	2.26	4.62	2.39	2.12	1.92
30	1.98	4.66	2.28	2.16	-------	3.50	2.44	2.26	3.98	2.18	2.14	1.89
31	1.99	-------	2.28	2.18	-------	3.28	-------	2.22	-------	2.15	2.06	-------

Daily discharge, in second-feet, of Lackawanna River at Moosic, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	156	1,500	270	190	450	1,010	330	230	3,000	215	148
2	100	325	1,400	240	720	420	880	310	275	3,610	480	195
3	172	290	2,460	220	545	420	840	315	1,400	2,460	360	190
4	190	260	1,600	280	450	384	1,510	580	1,700	1,600	330	225
5	152	240	1,220	450	420	450	1,220	960	1,220	1,220	305	185
6	140	230	1,040	450	390	615	1,220	685	960	1,000	290	185
7	124	230	800	342	320	1,500	1,310	685	800	760	275	180
8	205	210	650	290	285	2,720	920	545	545	615	300	164
9	160	220	580	270	260	1,800	1,040	510	480	580	290	144
10	144	230	545	270	270	1,310	1,040	450	420	510	240	104
11	148	225	545	270	300	1,500	1,040	420	510	420	250	120
12	240	260	510	270	285	1,400	1,800	420	580	360	240	195
13	200	220	450	240	280	1,220	1,000	420	450	342	190	136
14	164	210	420	235	270	1,400	1,220	315	384	325	200	120
15	200	290	342	235	275	1,310	2,720	285	366	300	215	104
16	180	305	310	210	250	1,130	2,000	280	360	230	200	100
17	136	295	320	205	210	920	1,500	270	420	300	200	100
18	140	378	685	215	235	720	1,400	275	3,610	354	195	120
19	140	342	580	240	250	685	1,220	720	2,220	320	200	116
20	260	720	480	265	580	1,040	880	840	1,220	290	164	108
21	250	580	450	270	650	1,040	840	615	1,040	275	172	100
22	190	545	378	270	685	800	720	510	1,000	270	180	108
23	200	450	325	225	1,400	650	650	450	960	240	180	96
24	180	450	390	220	2,110	615	580	390	800	342	176	78
25	164	450	378	190	1,220	580	545	390	615	255	210	98
26	172	450	320	185	960	615	480	390	510	240	290	96
27	172	720	336	180	720	685	450	240	480	240	240	96
28	148	3,300	310	180	685	1,130	480	280	450	420	185	100
29	140	4,440	285	185	-------	1,500	384	260	2,220	325	190	108
30	132	2,340	270	210	-------	1,130	354	260	1,600	220	200	98
31	136	-------	270	220	-------	960	-------	240	-------	205	164	-------

Monthly discharge of Lackawanna River at Moosic, for the year ending Sept. 30, 1922

(Drainage area 265 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	260	100	168	0.634	0.73
November	4,440	156	645	2.43	2.71
December	2,460	270	650	2.45	2.82
January	450	180	252	.951	1.10
February	2,110	190	543	2.05	2.14
March	2,720	384	1,000	3.77	4.35
April	2,720	354	1,060	4.00	4.46
May	960	240	440	1.66	1.91
June	3,610	230	928	3.50	3.90
July	3,610	205	700	2.64	3.04
August	480	164	236	.891	1.03
September	225	78	130	.491	.55
The year	4,440	78	561	2.12	28.74

SUSQUEHANNA BASIN—STATION NO. 8

NORTH BRANCH SUSQUEHANNA RIVER AT WILKES-BARRE

Location.—At four-span steel highway bridge, Market Street, Wilkes-Barre, Luzerne County.

Drainage Area.—9,960 square miles.

Records Available.—November 1, 1890, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Milton Wentz. Elevation of gage zero 511.03 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge, except in extremely high stages when they are taken from the Port Bowkley railroad bridge, where the entire discharge of the stream is confined to one channel without overflow.

Channel and Control.—Right bank is low and subject to overflow at a stage of about 18.5 feet; left bank subject to overflow only at extremely high stages. Bed is composed of culm, sand and gravel. Control for low stages is at a riffle about 4,000 feet below gage; occasionally shifting. For high stages the control is probably the dam at Nanticoke, 9 miles below gage.

Extremes of Discharge.—Maximum stage during the year, 22.31 feet observed at 4 p. m. November 29 (discharge, 117,000 second-feet); minimum, 2.23 feet at 4 p. m. October 3 (discharge, 1,610 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 1300 and 160,000 second-feet. Gage read to hundredths once daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height, computed from a continuous daily hydrograph, obtained by plotting daily gage readings, to rating table. Results good.

Discharge measurements of North Branch Susquehanna River at Wilkes-Barre during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
60	June 24	H. L. Landis and H. J. McIntyre	10.79	36,000
61	Aug. 21	H. L. Landis	2.96	2,930

Daily Mean Gage Height, in feet, of North Branch Susquehanna River at Wilkes-Barre, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.35	3.02	16.14	3.56	3.51	8.08	11.60	5.23	3.75	10.64	2.94	4.68
2	2.30	3.19	13.43	3.53	3.90	7.09	12.14	4.99	3.60	11.52	2.97	4.40
3	2.24	4.94	13.11	3.45	4.32	6.35	12.29	4.77	5.15	12.40	3.14	4.23
4	2.47	6.08	12.37	3.41	4.35	6.06	12.34	4.63	11.81	12.01	3.20	4.10
5	2.57	5.35	11.14	3.86	4.74	5.99	14.31	5.33	11.38	11.00	3.20	4.00
6	2.41	4.88	10.05	5.40	5.41	6.04	13.36	6.92	9.85	9.11	3.18	4.45
7	2.43	4.55	8.91	7.69	5.72	10.02	12.16	7.49	8.43	7.80	3.14	4.72
8	2.50	4.38	8.01	6.86	5.36	17.87	11.93	7.68	7.79	6.85	3.30	4.45
9	2.63	4.20	7.33	6.26	5.08	17.88	11.72	7.30	6.99	6.25	3.36	4.10
10	2.70	4.09	6.85	5.54	4.88	14.71	11.42	6.80	6.36	5.71	4.08	3.87
11	2.59	4.12	6.55	5.08	4.79	12.68	10.92	6.22	5.89	5.30	4.05	3.60
12	2.78	4.91	6.12	5.59	4.75	12.56	11.46	5.70	6.94	5.02	4.10	3.50
13	3.01	5.42	6.08	5.95	4.76	12.47	11.44	5.38	11.49	4.70	3.70	3.90
14	2.90	5.24	5.96	5.17	5.11	12.31	11.61	5.06	11.38	4.46	3.41	5.52
15	2.88	5.17	5.74	5.23	5.11	13.46	11.96	4.83	10.31	4.22	3.23	4.75
16	2.91	5.66	5.56	4.98	4.76	13.03	12.33	4.58	8.21	4.04	3.13	4.20
17	2.93	6.19	5.48	4.98	4.45	11.76	12.50	4.38	7.86	3.88	2.91	3.91
18	2.87	6.11	5.49	4.77	4.27	10.17	11.61	4.20	12.33	3.78	2.85	3.62
19	2.73	7.75	7.29	4.68	4.17	8.87	12.08	4.52	11.43	3.72	2.80	3.44
20	2.73	9.20	7.83	4.38	4.44	8.12	11.06	5.20	8.94	3.70	2.78	3.27
21	2.97	9.90	6.90	4.33	5.60	8.45	9.83	5.77	8.21	3.70	2.80	3.16
22	3.21	9.85	5.93	4.40	6.94	8.95	9.11	5.95	8.71	3.60	3.05	3.01
23	3.91	8.87	5.35	4.37	10.41	9.34	8.56	5.50	11.29	3.47	3.00	2.91
24	4.30	7.80	4.67	4.31	15.23	8.29	7.81	4.99	11.00	3.33	2.94	2.84
25	4.17	7.25	4.45	4.13	16.27	7.70	7.33	4.64	10.27	3.40	3.23	2.68
26	3.89	7.83	4.39	4.65	13.55	7.62	6.96	4.49	9.25	3.33	7.91	2.63
27	3.61	8.70	4.47	4.66	11.02	8.13	6.51	4.40	8.15	3.33	7.09	2.60
28	3.33	12.52	4.33	4.07	9.32	10.04	6.11	4.55	7.25	3.25	7.60	2.60
29	3.23	21.29	4.26	3.88	-------	13.41	5.81	4.57	10.09	3.24	6.30	2.60
30	3.10	20.13	3.98	3.57	-------	13.51	5.52	4.29	10.86	3.14	5.50	2.54
31	3.06	-------	3.60	3.50	-------	12.48	-------	4.03	-------	2.98	5.05	-------

Note.—Stage-discharge relation Jan. 12-20 and 26-29 affected by ice.

Daily discharge, in second feet, of North Branch Susquehanna River at Wilkes-Barre, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,740	2,860	63,100	4,150	3,920	20,900	37,400	9,000	4,640	32,500	2,660	7,250
2	1,670	3,270	46,700	3,920	4,890	16,500	40,000	8,270	4,150	36,900	2,860	6,290
3	1,610	7,920	45,100	3,700	5,990	13,700	41,000	7,580	9,000	41,500	3,060	5,700
4	1,880	12,500	41,500	3,700	6,290	12,500	41,000	6,920	38,400	39,500	3,270	5,420
5	2,040	9,750	34,900	4,890	7,250	12,100	51,500	9,370	36,400	34,500	3,270	5,150
6	1,810	7,920	29,600	9,750	9,750	12,100	46,700	15,700	28,700	25,400	3,270	6,290
7	1,880	6,920	24,500	19,100	10,900	29,600	40,500	18,200	22,200	19,600	3,060	7,250
8	1,960	6,290	20,400	15,700	9,750	77,400	39,000	19,100	19,600	15,300	3,480	6,290
9	2,200	5,700	17,400	13,300	8,630	77,400	37,900	17,400	15,100	12,900	3,700	5,420
10	2,290	5,420	15,300	10,100	7,920	53,800	36,400	15,300	13,700	10,900	5,420	4,890
11	2,120	5,420	14,500	8,630	7,580	43,100	34,000	12,900	11,700	9,370	6,920	4,150
12	2,470	7,920	12,500	6,500	7,580	42,500	36,900	10,900	15,700	8,270	5,420	3,920
13	2,860	9,750	12,500	5,000	7,580	42,000	36,400	9,750	36,900	7,250	4,390	4,890
14	2,660	9,000	12,100	4,200	8,630	41,000	37,400	8,630	36,400	6,600	3,700	10,100
15	2,660	9,000	10,900	3,800	8,630	47,200	39,500	7,580	31,000	5,700	3,270	7,580
16	2,660	10,900	10,500	3,800	7,580	44,600	41,000	6,920	21,400	5,150	3,060	5,700
17	2,660	12,900	10,100	4,000	6,290	38,400	42,000	6,290	20,000	4,890	2,660	4,890
18	2,660	12,500	10,100	4,400	5,990	30,600	37,400	5,700	41,000	4,640	2,470	4,150
19	2,290	19,600	17,400	5,000	5,700	24,500	40,000	6,600	36,400	4,390	2,470	3,700
20	2,290	25,900	19,600	5,500	6,290	20,900	34,900	9,000	24,500	4,390	2,470	3,480
21	2,860	29,100	15,700	5,990	10,500	22,200	28,700	11,300	21,400	4,390	2,470	3,270
22	3,270	28,700	11,700	6,290	15,700	25,000	25,400	12,100	23,600	4,150	2,860	2,860
23	4,890	24,500	9,750	6,290	31,500	26,300	23,200	10,100	35,900	3,920	2,860	2,660
24	5,990	19,600	7,250	5,990	56,900	21,800	19,600	8,270	34,500	3,480	2,660	2,470
25	5,700	17,000	6,290	5,420	64,600	19,100	17,400	6,920	31,000	3,700	3,270	2,290
26	4,890	19,600	6,290	5,000	47,800	18,700	16,100	6,600	25,900	3,480	20,000	2,200
27	4,150	23,600	6,600	4,600	34,500	20,900	14,100	6,660	21,400	3,480	16,500	2,120
28	3,700	42,000	5,990	4,400	26,300	29,600	12,500	6,920	17,000	3,270	18,700	2,120
29	3,270	107,000	5,990	4,200	-------	46,700	11,300	6,920	30,100	3,270	13,300	2,120
30	3,060	96,300	5,150	4,150	-------	47,200	10,100	5,990	34,000	3,060	10,100	2,040
31	3,060	-------	4,150	3,920	-------	42,000	-------	5,150	-------	2,860	8,270	-------

Note.—Discharge Jan. 12-20 and 26-29 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for North Branch Susquehanna River at Danville.

Monthly discharge of North Branch Susquehanna Rivr at Wilkes-Barre, for the year ending Sept. 30, 1922

(Drainage area 9,960 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	5,990	1,610	2,880	0.289	0.33
November	107,000	2,860	20,000	2.01	2.24
December	63,100	4,150	17,900	1.80	2.08
January	19,100	3,700	6,300	.633	.73
February	64,600	3,920	15,500	1.56	1.62
March	77,400	12,100	32,900	3.30	3.80
April	51,500	10,100	32,300	3.24	3.62
May	19,100	5,150	9,610	.965	1.11
June	41,000	4,150	24,800	2.49	2.78
July	41,500	2,860	11,900	1.19	1.37
August	20,000	2,470	5,540	.556	.64
September	10,100	2,040	4,560	.458	.51
The year	107,000	1,610	15,300	1.54	20.83

SUSQUEHANNA BASIN—STATION NO. 9

WAPWALLOPEN CREEK NEAR WAPWALLOPEN

Location.—At single-span steel highway bridge, known as Harts Bridge, three and one half miles southeast of Wapwallopen, Luzerne County, and three and one half miles above mouth of creek.

Drainage Area.—46 square miles.

Records Available.—October 24, 1919, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Calvin P. Readler.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right is of medium height and becomes inundated during extremely high stages. Bed is composed of gravel and boulders. Control is at a riffle about 1,000 feet below gage, where bed is composed of a compact formation of coarse garvel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 5.8 feet at 5 a. m. April 15 (discharge, about 1,160 second-feet); minimum, 0.76 foot from 7 p. m. September 27 to 7 a. m. September 28 (discharge, 3 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—The operation of grist mills above the station may cause variation in stage during low flows. There is very little storage at the mill dam one and one half miles above the gage; at the dam three and one half miles above the gage there is some storage and flow during part of day, at time of low water, can probably be stored.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined between 4 and 300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extremely high stages when they are fair.

Cooperation.—Station is maintained in cooperation with M. O. Leighton, Consulting Engineer, Washington, D. C.

Discharge measurements of Wapwallopen Creek near Wapwallopen during the year ending Sept. 30, 1922

No.	Date	Made by	Gage	Discharge
			Feet	Sec. ft.
13	June 25	H. J. McIntyre	1.59	49.0
14	Sept. 29*	J. M. Snavely	.82	4.01

*Wading measurement 100 feet above gage.

Daily Mean Gage Height, in feet, of Wapwallopen Creek near Wapwallopen, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.22	1.10	3.06	1.52	1.06	2.00	2.14	1.52	1.51	1.91	0.96	1.19
2	1.05	1.25	3.00	1.35	2.35	2.01	2.16	1.51	1.77	2.74	1.06	1.06
3	1.10	1.31	2.88	1.96	2.90	2.04	2.12	1.50	2.25	2.33	1.03	.97
4	1.13	1.46	2.85	2.09	2.52	2.04	2.15	1.60	2.68	2.05	1.25	.93
5	1.09	1.41	2.66	2.20	2.27	2.08	2.07	2.43	2.28	1.97	1.14	.95
6	1.07	1.34	2.36	1.90	2.10	2.33	2.04	1.94	2.93	1.80	1.11	.96
7	1.05	1.29	2.27	1.65	2.00	3.97	2.09	1.87	2.90	1.67	1.04	.93
8	1.21	1.26	2.13	1.52	1.94	4.03	2.03	1.76	2.45	1.71	1.04	.92
9	1.27	1.32	2.02	1.31	1.90	3.11	1.95	-------	2.28	1.55	.98	.97
10	1.24	1.46	1.97	1.55	1.92	2.85	1.88	-------	2.24	1.44	1.07	.84
11	1.21	1.32	1.91	1.77	1.94	2.71	1.82	-------	2.28	1.42	.96	.93
12	1.25	1.40	1.87	1.80	2.18	2.59	2.33	1.49	2.22	1.33	.97	1.04
13	1.27	1.40	1.85	1.40	2.08	2.53	2.21	1.55	2.14	1.29	1.07	1.04
14	1.25	1.37	1.81	1.53	1.91	-------	2.15	1.56	1.93	1.31	.99	.96
15	1.23	1.33	1.76	1.68	1.99	-------	4.62	1.61	1.73	1.25	.92	.93
16	1.19	1.35	1.72	1.68	1.87	2.35	3.47	1.56	1.64	1.24	.93	.96
17	1.17	1.31	1.74	1.39	1.80	2.30	3.38	1.51	1.59	1.16	.98	.98
18	1.13	1.29	3.12	1.21	1.77	2.28	3.37	1.77	1.58	1.35	.92	.94
19	1.16	1.39	2.97	1.32	1.79	2.26	2.92	2.82	1.56	1.43	.94	.82
20	1.60	1.37	2.51	1.29	2.35	2.58	2.68	2.53	1.51	1.30	.84	.84
21	1.73	1.54	2.08	1.31	2.80	2.37	2.27	2.13	1.89	1.18	.91	.79
22	1.70	1.49	1.90	1.23	2.87	2.16	2.01	1.95	2.09	1.14	.94	.83
23	1.41	1.46	2.02	1.17	2.97	2.12	1.98	1.84	1.99	1.18	.93	.81
24	1.37	1.50	2.15	1.14	3.13	1.96	1.93	1.78	1.87	1.27	1.02	.81
25	1.35	1.66	2.27	1.12	2.70	1.92	1.86	1.72	1.68	1.12	.93	.83
26	1.29	1.75	2.07	1.10	2.29	1.85	1.81	1.69	1.49	1.11	1.05	.82
27	1.22	2.22	1.92	1.08	2.15	1.92	1.74	1.59	1.47	1.12	1.05	.81
28	1.16	4.31	1.94	1.06	2.08	1.91	1.66	1.58	1.47	1.25	.99	.79
29	1.08	4.35	1.90	1.06	-------	-------	1.65	1.48	1.58	1.09	.94	.82
30	1.06	3.62	1.76	1.04	-------	-------	1.57	1.43	1.41	1.00	.97	.83
31	1.03	-------	1.67	1.04	-------	-------	-------	1.45	-------	1.03	1.00	-------

Note.—Stage-discharge relation Feb. 5-22 affected by ice. Gage height not observed on days of no record.

Daily discharge, in second-feet, of Wapwallopen Creek near Wapwallopen, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	12	280	43	11	95	115	43	42	84	7	17
2	10	21	260	28	144	95	115	42	68	212	11	11
3	12	25	240	89	240	102	108	41	129	144	10	7
4	14	37	230	108	167	102	115	50	202	102	21	7
5	12	33	193	122	70	108	102	159	136	91	15	7
6	11	27	144	83	32	144	102	88	250	71	13	7
7	10	23	129	55	38	510	108	79	240	57	10	7
8	19	22	115	43	34	510	102	67	159	61	10	6
9	22	26	95	25	24	280	89	50	136	46	8	7
10	20	37	91	46	18	230	81	40	129	36	11	5
11	19	26	84	68	22	202	73	36	136	34	7	7
12	21	32	79	71	46	184	144	40	122	26	7	10
13	22	32	77	32	42	176	122	46	115	23	11	10
14	21	30	72	44	32	160	115	46	87	25	8	7
15	20	26	67	58	36	150	705	51	63	21	6	7
16	17	28	62	58	28	144	375	46	54	20	7	7
17	16	25	64	31	18	136	350	42	49	16	8	8
18	14	23	280	19	14	136	350	68	48	28	6	7
19	16	31	250	26	14	129	240	221	46	35	7	4
20	50	30	167	23	24	184	202	176	42	24	5	5
21	63	45	108	25	65	144	129	115	82	17	6	4
22	60	40	83	20	140	115	95	89	108	15	7	5
23	33	37	95	16	250	108	93	76	94	17	7	4
24	30	41	115	15	290	90	87	69	79	22	9	4
25	28	55	129	14	202	85	78	62	48	14	7	5
26	23	66	102	12	136	77	72	59	40	13	10	4
27	19	122	85	12	115	85	64	49	38	14	10	4
28	16	600	88	11	108	84	56	48	38	21	8	4
29	12	635	83	11	-------	95	55	39	48	12	7	4
30	11	400	67	10	-------	110	47	35	33	8	7	5
31	10	-------	57	10	-------	100	-------	36	-------	10	8	-------

Note.—Discharge Feb. 5-22 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Nescopeck Creek near St. Johns and Fishing Creek at Bloomsburg. Discharge Mar. 14 and 15, 29-31 and May 9-11 estimated, because of no gage height record, from study of gage height graph and discharge of Nescopeck Creek near St. Johns.

Monthly discharge of Wapwallopen Creek near Wapwallopen, for the year ending Sept. 30, 1922

(Drainage area 46 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	63	10	21.6	0.470	0.54
November	635	12	86.2	1.87	2.09
December	280	57	129	2.80	3.23
January	122	10	39.6	.861	.99
February	280	11	83.9	1.82	1.90
March	510	77	157.	3.41	3.93
April	705	47	150.	3.26	3.64
May	221	35	68.0	1.48	1.71
June	250	33	95.4	2.07	2.31
July	212	8	42.5	.924	1.07
August	21	5	8.84	.192	.22
September	17	4	6.53	.142	.16
The Year	705	4	73.8	1.60	21.79

SUSQUEHANNA BASIN—STATION NO. 10

NESCOPECK CREEK NEAR ST. JOHNS

Location.—At single-span steel highway bridge, the first above the Wilkes-Barre & Hazleton Railway bridge, near St. Johns, Luzerne County.

Drainage Area.—49 Square miles.

Records Available.—July 13, 1916, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Mrs. Edwin Sterling and John Klinger. Elevation of gage zero 1,116.47 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control consists of boulders 50 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.4 feet at 10 a. m. March 8 (discharge, about 1,610 second-feet); minimum, 1.14 feet from 6 p. m. September 25 to 6 p. m. September 30 (discharge, 9 second-feet).

Ice.—Stage-discharge relation seriously affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 100 second-feet and fairly well defined between 100 and 500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

Discharge measurements of Nescopeck Creek near St Johns during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
21	June 23	H. L. Landis	2.57	184.
22	23	H. J. McIntyre	2.56	155.
23	Aug. 21	do	1.21	10.5

Daily Mean Gage Height, in feet, of Nescopeck Creek near St. Johns, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.37	1.27	3.44	2.52	2.58	2.69	2.48	1.90	1.80	1.78	1.37	1.52
2	1.30	1.28	2.98	2.77	2.78	2.68	2.58	1.90	1.70	1.89	1.44	1.30
3	1.32	1.34	3.54	3.80	3.14	2.64	2.64	1.90	2.03	1.91	1.43	1.31
4	1.44	1.41	3.52	3.80	2.93	2.58	2.78	1.95	2.32	1.83	1.54	1.41
5	1.50	1.77	3.18	3.80	2.82	2.52	2.73	2.85	2.75	2.04	1.56	1.35
6	1.40	1.78	2.70	2.85	2.80	2.67	2.62	2.58	3.45	2.19	1.42	1.30
7	1.34	1.74	2.54	2.26	2.77	2.98	2.57	2.15	4.05	1.99	1.38	1.24
8	1.52	1.71	2.40	2.29	2.72	5.64	2.52	1.89	4.19	1.94	1.38	1.20
9	1.73	1.69	2.23	2.15	2.67	4.55	2.42	1.85	3.65	1.88	1.38	1.16
10	1.70	1.80	2.19	1.92	2.63	3.41	2.48	2.03	2.93	1.84	1.36	1.16
11	1.39	1.79	2.16	1.87	2.60	3.32	3.70	2.02	2.82	1.78	1.33	1.18
12	1.34	1.72	2.22	1.90	2.60	3.19	3.82	1.88	2.72	1.73	1.32	1.48
13	1.39	1.68	2.17	2.55	2.60	3.14	2.73	1.76	2.62	1.70	1.32	1.51
14	1.51	1.64	2.09	3.34	2.60	3.04	2.48	1.73	2.68	1.64	1.30	1.29
15	1.52	1.62	2.02	3.32	2.62	2.50	3.65	1.69	2.90	1.62	1.30	1.28
16	1.50	1.58	1.96	3.37	2.64	2.40	3.90	1.75	3.00	1.60	1.29	1.24
17	1.47	1.56	1.96	3.40	2.64	2.41	3.68	1.80	3.05	1.56	1.27	1.20
18	1.41	1.73	2.16	3.40	2.62	2.35	3.25	1.96	2.87	1.66	1.26	1.20
19	1.34	1.80	2.66	3.33	2.60	2.30	2.99	2.75	2.61	1.82	1.25	1.20
20	1.39	1.78	2.58	3.27	3.04	2.78	2.95	2.88	2.21	1.64	1.24	1.20
21	1.68	2.42	2.51	3.15	3.48	3.15	2.87	2.81	1.90	1.54	1.22	1.20
22	2.07	2.47	2.48	3.12	3.82	2.99	2.82	2.62	1.95	1.52	1.21	1.18
23	1.90	2.32	2.44	3.04	3.88	2.35	2.52	2.38	2.28	1.50	1.20	1.18
24	1.78	2.16	3.71	2.26	4.05	2.05	2.32	2.31	2.71	1.48	1.20	1.16
25	1.73	2.08	5.78	2.50	3.65	1.96	2.36	2.26	2.82	1.46	1.21	1.15
26	1.68	2.02	6.02	2.50	3.34	1.92	2.32	2.12	2.81	1.46	1.83	1.14
27	1.62	2.02	4.23	2.56	3.15	2.18	2.26	1.98	2.76	1.47	1.48	1.14
28	1.58	3.25	2.85	2.64	2.82	2.31	2.22	1.94	2.67	1.60	1.40	1.14
29	1.49	5.33	2.12	2.54	-------	2.42	1.95	1.90	2.04	1.46	1.35	1.14
30	1.44	4.35	2.31	2.52	-------	2.49	1.90	1.88	1.87	1.41	1.29	1.14
31	1.40	-------	2.42	2.50	-------	2.43	-------	1.84	-------	1.38	1.41	-------

Note.—Stage-discharge relation Dec. 20-28, Dec. 30 to Jan. 10, Jan. 13 to Feb. 1 and Feb. 5-22 affected by ice.

Daily discharge, in second-feet, of Nescopeck Creek near St. Johns, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	13	387	40	24	214	171	66	52	50	18	25
2	14	13	283	36	236	214	192	66	40	65	21	18
3	15	16	415	90	308	203	203	66	89	68	20	14
4	21	20	415	110	271	192	236	74	132	56	27	20
5	24	48	334	120	110	171	225	248	225	89	28	16
6	19	50	214	80	46	203	192	192	387	114	20	14
7	16	45	182	50	60	283	182	106	570	80	18	12
8	25	41	151	40	46	1,220	171	65	640	72	18	11
9	44	39	123	36	30	785	151	59	445	63	18	10
10	40	52	114	36	28	387	171	89	271	58	17	10
11	18	51	106	62	30	360	475	81	236	50	16	10
12	16	42	114	66	65	334	505	63	214	44	15	28
13	18	39	106	40	60	308	225	47	192	40	15	25
14	25	35	97	46	46	283	171	44	214	35	14	14
15	25	33	81	50	46	171	445	39	259	33	14	13
16	24	30	75	40	40	151	535	46	283	31	14	12
17	22	28	75	28	30	151	475	52	283	28	13	11
18	20	44	106	24	24	142	334	75	248	36	13	11
19	16	52	203	28	24	132	283	225	192	55	12	11
20	18	50	160	24	28	236	271	259	114	35	12	11
21	38	151	110	28	65	334	248	236	66	27	12	11
22	89	161	95	22	280	283	236	192	74	25	11	10
23	66	132	110	22	535	142	171	151	132	24	11	10
24	50	106	110	19	570	89	132	132	214	29	11	10
25	44	97	120	19	445	75	142	123	236	22	11	9
26	38	81	110	16	360	69	132	97	236	22	56	9
27	33	81	90	16	334	114	123	78	225	22	23	9
28	30	334	90	16	236	132	114	72	203	31	19	9
29	24	1,080	97	16	-------	151	74	66	89	22	16	9
30	21	710	75	16	-------	171	66	63	62	20	14	9
31	19	-------	50	16	-------	161	-------	58	-------	18	20	-------

Note.—Discharge Dec. 20-28, Dec. 30 to Jan. 10, Jan. 13 to Feb. 1 and Feb. 5-22 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Wapwallopen Creek near Wapwallopen and Fishing Creek at Bloomsburg.

Monthly discharge of Nescopeck Creek near St. Johns, for the year ending Sept. 30, 1922

(Drainage area 49 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	89	14	28.7	0.586	0.68
November	1,080	13	122	2.49	2.78
December	415	50	155	3.16	3.64
January	120	16	40.4	.824	.95
February	570	24	156	3.18	3.31
March	1,220	69	254	5.18	5.97
April	535	66	235	4.80	5.36
May	259	39	104	2.12	2.44
June	640	40	221	4.51	5.03
July	114	18	43.8	.894	1.03
August	56	11	17.6	.359	.41
September	25	9	12.9	.263	.29
The Year	1,220	9	115	2.35	31.89

SUSQUEHANNA BASIN—STATION NO. 11

FISHING CREEK AT BLOOMSBURG

Location.—At single-span, wooden covered, highway bridge, known as Red Rock Bridge, Bloomsburg, Columbia County.

Drainage Area.—355 square miles.

Records Available.—January 27, 1914, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by L. Norman Cox.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of sand and gravel. Control is at a riffle, where the bed is composed of gravel, about 700 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.9 feet at 6 a. m. June 6 (discharge, about 13,000 second-feet); minimum, 1.81 feet at 5.10 p. m. August 22 (discharge, 19 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve well defined below 600 second-feet and fairly well defined between 600 and 2.200 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

Discharge measurements of Fishing Creek at Bloomsburg, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
19	June 25a	H. L. Landis	3.04	327
20	Aug. 28b	do	2.08	93.0
21	Sept. 29c	J. M. Snavely	1.93	24.8

a Measurement made by wading 1,500 feet above gage.
b Measurement made by wading 500 feet above gage. Considerable fluctuation owing to operation of power plant.
c Measurement made by wading 600 feet above gage.

Daily Mean Gage Height, in feet, of Fishing Creek at Bloomsburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.00	2.85	5.64	3.30	3.19	3.80	5.26	3.16	2.71	4.02	2.30	2.36
2	2.90	3.68	4.74	3.19	3.91	3.76	5.11	3.09	3.17	7.93	2.33	2.41
3	2.91	3.36	4.14	3.09	5.98	3.32	4.76	3.04	7.32	6.72	2.36	2.46
4	3.81	3.27	4.32	3.09	4.33	3.38	4.77	3.20	7.71	5.10	2.74	2.45
5	3.42	3.15	5.19	4.12	3.74	3.53	4.81	4.93	7.64	4.47	2.90	2.30
6	3.24	3.11	4.79	3.95	3.48	4.22	4.57	4.73	9.49	4.04	2.66	2.28
7	3.10	3.05	4.42	3.43	3.67	6.85	4.51	4.40	6.99	3.75	2.50	2.26
8	3.24	3.02	4.14	3.07	3.36	8.92	4.38	4.09	5.67	3.55	2.50	2.24
9	3.66	3.05	3.93	3.18	3.33	6.12	4.30	3.83	5.58	3.43	2.44	2.17
10	3.44	3.08	3.82	3.12	3.14	5.35	4.16	3.66	4.46	3.23	2.02	2.17
11	3.31	3.15	3.72	2.93	3.23	5.51	4.21	3.51	4.26	3.14	2.05	2.20
12	4.04	3.21	3.75	3.01	3.82	6.09	5.30	3.43	5.00	3.05	1.98	2.40
13	3.9	3.41	3.70	3.17	3.53	5.56	4.88	3.27	4.28	3.06	2.25	2.42
14	3.7	3.24	3.50	3.01	3.22	5.43	4.60	3.20	3.96	2.90	2.35	2.34
15	3.4	3.21	3.40	3.13	3.28	5.43	8.19	3.29	3.74	2.75	2.21	2.27
16	3.3	3.17	3.14	3.13	3.20	5.11	6.86	3.17	3.50	2.69	2.24	2.27
17	3.3	3.20	3.20	3.00	3.0	4.46	5.85	3.03	3.83	2.74	2.23	2.35
18	**3.25**	**3.30**	**4.80**	**2.93**	**3.26**	4.26	**5.50**	**3.18**	**4.61**	**2.84**	**2.21**	**2.21**
19	3.2	3.48	5.01	2.98	3.04	4.15	4.95	3.84	3.29	2.81	2.19	2.15
20	**3.58**	**4.59**	**4.56**	**2.96**	**4.27**	**4.37**	**4.68**	**4.15**	**3.15**	**2.71**	**2.21**	**2.16**
21	3.88	4.71	4.33	2.98	5.13	4.42	4.34	3.81	3.08	2.54	2.18	2.09
22	3.44	4.38	3.90	2.88	5.44	4.15	4.15	3.57	3.78	2.33	1.82	2.11
23	3.21	4.10	3.89	3.09	6.48	3.87	3.95	3.38	3.43	2.52	2.15	2.13
24	3.32	3.93	3.99	3.07	6.77	3.81	3.84	3.23	3.16	2.37	1.89	1.99
25	3.34	3.85	4.00	2.93	5.38	3.82	3.68	3.16	3.07	2.41	2.08	2.12
26	3.18	3.67	3.46	3.08	4.59	3.97	3.62	3.17	3.02	2.39	1.90	1.99
27	3.14	4.11	3.53	3.13	4.40	4.09	3.45	3.07	2.92	2.34	1.89	2.02
28	3.07	7.90	3.48	3.08	4.16	6.23	3.36	3.02	2.87	2.47	1.93	2.01
29	3.00	9.53	3.46	3.19	-------	5.96	3.28	2.92	3.02	2.67	2.32	1.99
30	2.81	6.75	3.19	3.03	-------	5.34	3.24	2.78	3.06	2.48	2.14	1.99
31	2.71	-------	3.24	3.03	-------	5.10	-------	2.75	-------	2.31	2.12	-------

Daily discharge, in second-feet, of Fishing Creek at Bloomsburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	**230**	**188**	**2,180**	**360**	**306**	**650**	**1,880**	**294**	**152**	**790**	**74**	**84**
2	209	590	1,330	306	720	620	1,690	266	298	5,240	79	49
3	203	390	895	266	2,630	370	1,420	246	4,320	3,500	84	101
4	650	345	1,010	266	1,050	400	1,420	310	4,920	1,690	160	99
5	422	290	1,780	860	620	500	1,250	1,510	4,770	1,130	200	74
6	330	274	1,420	755	458	930	1,420	1,330	8,000	825	141	72
7	270	250	1,090	428	560	3,630	1,170	1,090	3,900	620	108	68
8	330	238	895	258	390	6,920	1,090	860	2,290	500	108	66
9	560	250	755	302	375	2,750	1,010	685	2,180	428	97	56
10	434	262	650	278	286	1,980	895	560	1,130	325	39	56
11	365	290	590	209	325	2,080	930	470	970	286	42	60
12	825	315	620	234	650	2,750	1,880	428	1,600	250	35	90
13	720	416	590	298	500	2,180	1,510	345	1,010	254	67	94
14	590	330	470	234	320	1,980	1,250	310	755	200	82	80
15	446	315	410	282	350	1,980	5,720	355	620	162	61	70
16	400	298	286	282	310	1,690	3,760	298	470	148	66	70
17	390	310	310	230	230	1,130	2,400	242	685	160	64	82
18	335	360	1,420	209	340	970	2,080	302	1,250	185	61	61
19	320	458	1,600	224	246	895	1,600	685	355	178	59	54
20	530	1,250	1,250	218	970	1,050	1,330	895	290	152	61	55
21	720	1,330	1,050	224	1,690	1,090	1,050	650	262	116	58	47
22	434	1,090	720	195	1,980	895	895	500	650	79	20	49
23	315	860	790	266	3,240	685	755	400	428	112	54	52
24	**370**	**755**	**790**	**258**	**3,630**	**650**	**685**	**325**	**294**	**85**	**26**	36
25	333	685	790	209	1,980	650	590	294	258	92	46	50
26	302	560	446	262	1,250	755	530	298	238	88	27	36
27	286	860	500	282	1,090	860	440	258	206	80	26	39
28	258	5,240	458	262	895	2,870	390	238	192	103	30	38
29	230	8,000	446	306	-------	2,630	350	206	238	143	77	36
30	178	3,630	306	242	-------	1,880	330	170	254	104	53	36
31	152	-------	330	242	-------	1,690	-------	162	-------	76	50	-------

Monthly discharge of Fishing Creek at Bloomsburg, for the year ending Sept. 30, 1922

(Drainage area 355 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	**825**	**152**	**393**	**1.11**	**1.28**
November	8,000	188	1,010	2.84	3.17
December	2,180	286	842	2.37	2.73
January	860	195	298	.839	.97
February	3,630	230	978	2.75	2.86
March	6,920	370	1,620	4.56	5.26
April	5,720	330	1,390	3.92	4.37
May	1,510	162	483	1.36	1.57
June	8,000	152	1,430	4.03	4.50
July	5,240	76	584	1.64	1.89
August	200	20	69.5	.196	.23
September	101	36	62.0	.175	.20
The Year.	**8,000**	**20**	**760**	**2.14**	**29.03**

SUSQUEHANNA BASIN—STATION NO. 12

NORTH BRANCH SUSQUEHANNA RIVER AT DANVILLE

Location.—At seven-span steel highway bridge between South Danville and Danville, Montour County.

Drainage Area.—11,200 square miles.

Records Available.—March 25, 1899, to December 31, 1903, and March 23, 1905, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by E. F. Bell. Elevation of gage zero 430.47 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Left bank is high and not subject to overflow; right bank subject to overflow at extremely high stages. Bed is composed of gravel and rock. Control is at a riffle a short distance below the gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 18.1 feet at 2 a. m. November 30 (discharge, 133,000 second-feet); minimum, 2.4 feet on October 2 and 3 and from 3 p. m. September 29 to 3 p. m. September 30 (discharge 2,270 second-feet).

Ice.—**Stage-discharge relation usually affected by ice.**

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 800 and 150,000 second-feet. Gage read to tenths twice daily; during high stages more frequently. **Daily discharge ascertained by applying daily mean gage height to rating table. Results good.**

Discharge measurements of North Branch Susquehanna River at Danville during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
64	June 26	H. J. McIntyre	8.27	33,600
65	26	H. L. Landis	8.08	30,700
66	Aug. 27	do	6.37	20,400

Daily Mean Height, in feet, of North Branch Susquehanna River at Danville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	2.8	14.6	3.35	6.0	7.25	9.9	4.65	3.5	8.65	2.8	4.15
2	2.4	2.9	12.1	4.1	6.55	6.45	10.2	4.4	3.5	9.85	2.85	3.85
3	2.4	3.0	11.25	5.35	8.0	5.75	10.55	4.25	4.35	10.65	2.8	3.65
4	2.6	4.0	11.0	5.7	7.25	5.4	10.05	4.1	7.55	10.1	3.0	3.5
5	2.6	4.75	9.9	5.65	7.6	5.2	11.3	4.6	10.8	9.85	3.05	3.5
6	2.5	4.4	8.85	6.0	10.65	5.5	11.6	5.35	10.4	8.5	2.95	3.3
7	2.5	4.0	7.9	7.1	10.2	6.4	10.4	6.05	8.8	7.25	2.9	4.0
8	2.65	3.8	7.15	6.15	9.6	13.0	10.0	6.55	7.5	6.3	2.9	3.75
9	2.7	3.7	6.45	5.65	12.15	15.2	9.85	6.3	6.9	5.65	3.0	3.45
10	2.7	3.6	5.95	5.2	11.7	13.35	9.65	6.0	5.95	5.2	3.0	3.4
11	2.7	3.5	5.55	4.85	11.3	11.3	9.25	5.55	5.75	4.8	3.6	3.3
12	2.6	3.5	5.25	4.8	10.8	10.75	9.5	5.1	5.75	4.45	3.35	3.2
13	2.8	4.3	5.15	3.95	9.75	10.65	9.4	4.75	7.45	4.2	3.55	3.05
14	2.9	4.4	5.1	3.4	9.6	10.2	9.75	4.5	10.35	4.0	3.25	3.6
15	2.8	4.3	4.85	3.05	9.8	10.65	11.2	4.35	9.65	3.85	3.1	4.35
16	2.8	4.3	4.6	3.25	9.8	10.9	11.0	4.15	7.95	3.65	2.9	3.85
17	2.8	4.8	4.35	3.3	8.95	10.25	11.05	3.95	6.55	3.55	2.8	3.45
18	2.8	5.1	4.65	3.55	8.75	9.05	10.3	3.8	6.85	3.45	2.75	3.25
19	2.7	5.35	5.65	3.75	9.05	8.0	10.15	3.95	10.85	3.45	2.65	3.1
20	2.7	7.4	6.4	3.8	10.05	7.15	9.9	4.45	8.3	3.4	2.6	3.0
21	2.8	8.0	6.5	3.95	11.25	7.0	8.85	4.55	7.1	3.3	2.6	2.9
22	2.9	8.3	5.65	3.9	10.7	7.0	7.9	4.95	6.85	3.3	2.6	2.8
23	3.0	7.8	4.95	3.7	9.5	7.7	7.35	5.1	8.2	3.2	2.75	2.7
24	3.55	6.9	4.6	3.7	11.9	7.3	6.9	4.65	9.45	3.1	2.75	2.7
25	3.65	6.2	4.35	3.5	13.55	6.6	6.45	4.35	8.8	3.0	2.7	2.6
26	3.5	6.1	4.35	3.4	12.2	6.3	6.05	4.1	8.25	3.1	4.05	2.6
27	3.3	6.7	3.9	3.35	10.25	6.55	5.75	4.0	7.3	3.0	5.95	2.5
28	3.2	8.05	3.95	3.5	8.45	7.4	5.35	3.85	6.4	3.1	6.2	2.5
29	3.1	15.85	4.0	6.15	-------	10.05	5.05	4.05	7.1	3.05	5.9	2.45
30	3.0	17.4	3.75	6.85	-------	11.3	4.85	3.95	9.2	3.0	4.95	2.4
31	2.8	-------	3.45	6.35	-------	10.8	-------	3.65	------	2.85	4.45	-------

Note.—Stage-discharge relation Jan. 2-6, 9-13 and Jan. 28 to Feb. 23 affected by ice.

Daily discharge, in second feet, of North Branch Susquehanna River at Danville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,530	3,370	90,800	5,380	4,200	24,900	45,000	10,700	5,770	34,600	3,370	8,780
2	2,270	3,670	64,500	4,600	6,000	20,000	47,500	9,730	5,770	44,100	3,520	7,000
3	2,270	3,980	56,300	4,200	7,000	16,700	51,000	8,780	9,730	51,000	3,370	6,170
4	2,800	7,870	54,500	4,000	7,500	14,600	45,800	8,320	27,500	46,600	3,980	5,770
5	2,800	11,600	45,000	4,600	9,500	13,600	57,200	10,700	52,700	44,100	3,980	5,770
6	2,530	9,730	36,100	13,000	12,000	15,100	59,900	14,600	49,200	33,900	3,820	5,000
7	2,530	7,870	29,600	24,200	12,000	20,000	49,200	17,800	36,100	24,900	3,670	7,870
8	2,940	7,000	24,900	18,900	11,000	73,500	45,800	21,200	26,900	19,400	3,670	7,000
9	3,080	6,580	20,000	15,000	10,000	97,600	44,100	19,400	23,000	15,600	3,980	5,380
10	3,080	6,170	17,800	12,000	9,000	77,700	42,500	17,800	17,800	13,600	3,980	5,380
11	3,080	5,770	15,600	9,500	8,500	57,200	39,200	15,600	16,700	11,600	6,170	5,000
12	2,800	5,770	13,600	8,000	8,500	52,700	41,700	13,100	16,700	9,730	7,000	4,640
13	3,370	9,250	13,600	6,000	9,000	51,600	40,800	11,600	26,200	8,780	6,170	3,980
14	3,670	9,730	13,100	5,380	9,500	47,500	44,100	10,200	49,200	7,870	4,640	6,170
15	3,370	9,250	11,600	3,980	10,000	51,000	56,300	9,730	42,500	7,000	4,300	9,730
16	3,370	9,250	10,700	4,640	9,000	53,600	54,500	8,780	30,300	6,170	3,670	7,000
17	3,370	11,600	9,730	5,000	8,000	47,500	54,500	7,870	21,200	6,170	3,370	5,380
18	3,370	13,100	10,700	6,170	7,000	37,700	48,400	7,000	22,400	5,380	3,220	4,640
19	3,080	14,600	15,600	7,000	6,500	30,300	47,500	7,870	52,700	5,380	2,940	4,300
20	3,080	26,200	20,000	7,000	7,500	24,900	45,000	9,730	32,500	5,380	2,800	3,980
21	3,370	30,300	20,600	7,870	10,000	23,600	36,100	10,700	24,200	5,000	2,800	3,670
22	3,670	32,500	15,600	7,430	18,000	23,600	29,600	12,600	22,400	5,000	2,800	3,370
23	3,980	28,900	12,600	6,580	34,000	28,200	26,200	13,100	31,700	4,640	3,220	3,080
24	6,170	23,000	10,700	6,580	62,600	25,500	23,000	10,700	40,800	4,300	3,220	3,080
25	6,170	18,900	9,730	5,770	79,800	21,200	20,000	9,730	36,100	3,980	3,080	2,800
26	5,770	18,300	9,730	5,380	65,500	19,400	17,800	8,320	31,700	4,300	7,870	2,800
27	5,000	21,800	7,430	5,380	47,500	21,200	16,700	7,870	25,500	3,980	17,800	2,530
28	4,640	34,600	7,870	4,600	33,200	26,200	14,600	7,000	20,000	4,300	18,900	2,530
29	4,300	105,000	7,870	4,200	-------	45,800	12,600	7,870	24,200	3,980	17,200	2,400
30	3,980	124,000	7,000	4,000	-------	57,200	11,600	7,870	39,200	3,980	12,600	2,270
31	3,370	-------	5,380	4,000	-------	52,700	-------	6,170	-------	3,520	9,730	-------

Note.—Discharge Jan. 2-6, 9-13 and Jan. 28 to Feb. 23 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for North Branch Susquehanna River at Wilkes-Barre and Susquehanna River at Harrisburg.

Monthly discharge of North Branch Susquehanna River at Danville, for the year ending Sept. 30, 1922

(Drainage area 11,200 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	6,170	2,270	3,540	0.316	0.36
November	124,000	3,370	20,700	1.85	2.06
December	90,800	5,380	22,200	1.98	2.28
January	24,200	3,980	7,420	.663	.76
February	79,800	4,200	18,700	1.67	1.74
March	97,600	13,600	37,800	3.38	3.90
April	59,900	11,600	38,900	3.47	3.87
May	21,200	6,170	11,000	.982	1.13
June	52,700	5,770	28,700	2.56	2.86
July	51,000	3,520	14,500	1.29	1.49
August	18,900	2,800	5,830	.521	.60
September	9,730	2,270	4,920	.439	.49
The year	124,000	2,270	17,800	1.59	21.54

WEST BRANCH SUSQUEHANNA RIVER AT BOWER

Location.—At single-span steel highway bridge, about four miles northeast of Mahaffey, near railroad station at Bower, Clearfield County.

Drainage Area.—320 square miles.

Records Available.—October 2, 1913, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by A. T. Bell and Leslie G. Bell. Elevation of gage zero, 1,207.22 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is low and subject to overflow at extremely high stages; left is high and not subject to overflow. Bed is composed of gravel. Control is at a riffle about 200 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 12.58 feet observed at 7.30 a. m. November 29 (discharge, about 8,950 second-feet); minimum, 3.70 feet from September 26 to September 30 (discharge, 25 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 20 and 4,000 second-feet. Gage read twice daily to quarter tenths; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

Discharge measurements of West Branch Susquehanna River at Bower during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
28	June 3	J. M. Snavely	5.72	506
29	Sept. 28a	H. J. McIntyre	3.72	19.6

a Measurement made by wading 150 feet above gage.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Bower, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.69	5.13	8.02	5.46	5.95	5.82	7.25	4.92	4.42	4.69	4.20	3.90
2	4.68	9.15	7.58	5.22	6.65	5.68	7.10	4.85	5.32	5.70	4.15	3.90
3	4.60	7.08	7.40	5.95	7.15	5.72	6.85	4.80	5.68	7.58	4.05	3.88
4	4.98	6.42	6.85	6.40	6.98	5.82	6.78	4.98	5.40	5.97	4.10	3.85
5	4.92	5.88	6.56	7.22	5.79	5.95	6.44	5.38	5.00	5.65	4.20	3.80
6	4.69	5.58	6.28	6.85	5.60	6.15	6.12	5.78	4.78	5.36	4.12	3.80
7	4.64	5.42	6.08	6.25	5.68	8.05	5.92	5.60	4.70	5.10	4.15	3.82
8	4.60	5.25	5.95	5.98	5.22	7.80	5.82	5.48	4.62	4.92	4.38	3.80
9	4.58	5.18	5.78	5.79	5.18	7.00	5.76	5.35	4.80	4.75	4.38	3.79
10	4.48	5.48	5.58	5.68	5.15	6.78	5.68	5.36	7.14	4.65	4.18	3.75
11	4.42	5.35	5.58	5.21	5.22	6.95	5.62	5.15	6.28	4.52	4.10	3.88
12	4.42	5.40	5.82	5.48	5.85	7.12	5.68	5.00	5.90	4.40	4.02	4.00
13	4.41	5.41	6.02	6.85	6.50	6.82	5.55	4.92	5.35	4.48	4.00	4.28
14	4.36	5.30	5.95	6.98	6.15	6.68	6.60	4.89	5.10	4.46	4.00	4.08
15	4.30	6.35	5.72	6.81	5.80	6.82	11.41	4.82	4.95	4.38	3.92	3.98
16	4.29	6.35	5.58	6.42	5.45	6.61	8.90	4.90	4.75	4.30	3.90	3.82
17	4.26	6.82	5.50	5.85	5.22	6.22	7.86	4.80	4.72	4.29	3.90	3.80
18	4.22	8.30	5.90	5.72	5.32	5.98	7.25	4.88	4.65	4.70	3.92	3.80
19	4.40	7.46	6.15	6.15	6.17	5.82	6.62	5.70	4.60	4.82	4.45	3.80
20	4.55	7.05	6.02	7.40	8.85	5.76	6.48	5.81	4.52	4.55	4.35	3.80
21	4.64	6.55	5.81	6.75	7.84	5.65	6.10	5.55	4.42	4.38	4.22	3.75
22	4.75	6.15	5.55	6.15	7.35	5.59	5.92	5.38	4.40	4.32	4.10	3.75
23	4.68	5.95	5.70	5.85	7.28	5.45	5.75	5.25	4.35	4.28	3.92	3.75
24	4.58	6.03	6.92	5.66	6.95	5.45	5.58	5.02	4.29	4.60	3.90	3.75
25	4.48	6.67	7.60	5.42	6.40	5.72	5.46	4.95	4.25	4.60	3.92	3.75
26	4.41	7.25	7.21	5.42	6.00	5.64	5.38	4.84	4.22	4.38	4.45	3.70
27	4.38	8.83	6.58	5.35	6.18	6.01	5.28	4.68	4.20	4.28	4.15	3.70
28	4.36	10.11	6.05	6.35	6.12	7.89	5.19	4.62	4.62	4.22	3.92	3.70
29	4.40	11.99	5.95	6.40	-------	7.48	5.12	4.54	5.67	4.28	4.05	3.70
30	4.32	9.58	5.58	6.35	-------	7.53	5.00	4.45	4.88	4.18	3.98	3.70
31	4.22	-------	5.65	6.20	-------	7.45	-------	4.40	-------	4.10	3.95	-------

Note.—Stage-discharge relation Jan. 2 and 3, 12-18 and Jan. 26 to Feb. 1 affected by ice.

Daily discharge, in second-feet, of West Branch Susquehanna River at Bower, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	145	265	2,520	378	320	550	1,640	190	98	145	65	38
2	145	4,040	2,060	260	1,090	495	1,540	178	315	495	60	38
3	125	1,540	1,840	280	1,640	495	1,260	165	495	2,060	50	37
4	220	935	1,260	935	795	550	1,260	220	355	640	55	34
5	190	610	1,090	1,640	550	640	972	355	220	470	65	31
6	145	445	865	1,260	445	762	730	550	165	335	57	31
7	135	355	730	830	495	2,520	610	445	145	250	60	32
8	125	298	640	670	280	2,280	550	400	125	190	92	31
9	125	280	550	550	280	1,450	522	335	165	155	92	30
10	107	400	445	495	265	1,260	495	335	1,540	135	63	28
11	98	335	445	280	280	1,450	445	265	865	110	55	37
12	98	355	550	260	580	1,540	495	220	610	95	48	125
13	96	335	670	320	1,010	1,260	422	190	335	107	46	77
14	89	315	640	400	762	1,180	1,090	190	250	104	46	53
15	80	900	495	360	550	1,260	7,150	165	205	92	40	44
16	78	900	445	280	378	1,090	3,650	190	155	80	38	32
17	74	1,260	400	260	280	795	2,400	165	145	78	38	31
18	68	2,880	610	300	315	670	1,640	190	135	145	40	31
19	95	1,950	762	762	762	550	1,090	495	125	165	102	31
20	118	1,450	670	1,840	3,520	522	1,010	550	110	118	88	31
21	135	1,090	550	1,260	2,280	470	730	422	98	92	68	28
22	15	762	422	762	1,840	445	610	355	95	83	55	28
23	145	640	495	580	1,740	378	522	298	88	77	40	28
24	125	700	1,360	470	1,450	378	445	220	78	125	38	28
25	107	1,180	2,060	355	935	495	378	205	72	125	40	28
26	96	1,640	1,640	280	570	470	355	178	68	92	102	25
27	92	3,520	1,090	280	795	670	315	145	65	77	60	25
28	89	5,310	700	320	730	2,400	280	125	125	68	40	25
29	95	8,050	640	360	-------	1,950	250	118	470	77	50	25
30	83	4,600	445	340	-------	1,950	220	102	190	63	44	25
31	68	-------	470	280	-------	1,840	-------	95	-------	55	42	-------

Note.—Discharge Jan. 2 and 3, 12-18 and Jan. 26 to Feb. 1 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Renovo and Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of West Branch Susquehanna River at Bower, for the year ending Sept. 30, 1922

(Drainage area 320 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	220	68	114	0.356	0.41
November	8,050	265	1,580	4.94	5.51
December	2,520	400	889	2.78	3.20
January	1,840	260	569	1.78	2.05
February	3,520	265	894	2.79	2.90
March	2,520	378	1,060	3.31	3.82
April	7,150	220	1,100	3.44	3.84
May	550	95	260	.812	.94
June	1,540	65	264	.825	.92
July	2,060	55	223	.697	.80
August	102	38	57.4	.179	.21
September	125	25	36.2	.113	.13
The Year	8,050	25	583	1.82	24.73

SUSQUEHANNA BASIN—STATION NO. 14

WEST BRANCH SUSQUEHANNA RIVER AT CLEARFIELD

Location.—At two-span steel highway bridge, Market Street, Clearfield, Clearfield County.

Drainage Area.—487 square miles.

Records Available.—December 1, 1904, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to half tenths twice daily by H. P. Bridge; during high stages more frequently. Elevation of gage zero 1,093.30 feet, United States Geological Survey datum.

Channel and Control.—Both banks are high and not subject to overflow. Control is a low dam about 2,000 feet below gage.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 7.9 feet at 9 a. m. November 29; minimum, —0.10 foot several days in June.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Clearfield, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.58	2.28	4.00	1.45	0.85	1.25	2.85	0.38	0.10	0.48	1.48	1.66
2	1.48	5.19	3.45	1.20	1.25	1.05	2.70	.30	.09	1.24	1.70	1.52
3	1.41	3.45	3.35	.80	2.25	1.00	2.25	.30	.22	2.88	1.80	1.50
4	1.40	2.55	3.30	1.40	1.70	1.00	2.06	.35	1.03	1.90	1.75	1.50
5	1.65	2.50	2.68	2.65	1.18	1.05	1.90	.55	.50	1.25	1.70	1.50
6	1.44	2.25	2.55	2.20	1.10	1.30	1.55	.71	.28	.90	1.70	1.45
7	1.38	2.05	2.34	1.70	1.08	2.85	1.35	1.05	.19	.65	1.60	1.35
8	1.28	1.85	2.18	1.45	.95	3.45	1.22	.85	.14	.52	1.80	1.22
9	1.24	1.70	2.08	1.60	.65	2.40	1.16	.68	.10	.38	1.95	1.18
10	1.18	1.82	1.98	1.20	.50	2.05	1.11	.58	1.22	.28	1.80	1.00
11	1.09	1.91	1.91	1.10	.55	2.60	1.05	.50	1.64	.19	1.75	.98
12	1.04	1.80	1.86	.75	1.10	2.85	1.08	.48	1.05	.14	1.60	1.65
13	1.00	1.80	2.18	.80	1.60	2.35	1.00	.38	.72	.55	1.50	2.25
14	.96	1.85	2.05	1.25	1.50	2.20	1.05	.30	.45	1.10	1.35	2.05
15	.88	2.10	1.88	1.20	1.20	2.40	5.12	.60	.29	1.10	1.20	1.78
16	.83	2.60	1.78	1.30	1.15	2.10	4.25	.48	.20	.98	1.05	1.68
17	.80	2.70	1.70	1.25	1.10	1.70	2.90	.40	.25	.85	.95	1.58
18	.80	4.14	2.45	1.00	1.10	1.45	2.60	.54	.45	1.70	.80	1.48
19	1.02	3.60	2.70	1.00	.93	1.28	2.10	1.00	.25	1.70	1.45	1.44
20	1.30	3.30	2.38	1.90	3.05	1.18	1.78	1.55	.08	1.55	1.80	1.40
21	1.48	2.90	2.28	2.45	3.30	1.08	1.65	1.26	.00	.85	1.95	1.34
22	1.55	2.58	2.15	1.85	2.45	.95	1.35	1.05	.00	.35	1.70	1.28
23	1.48	2.35	2.00	1.60	2.95	.80	1.15	.92	—.02	.20	1.40	1.18
24	1.35	2.18	2.44	1.05	2.55	.80	1.02	.75	—.10	.40	1.20	.90
25	1.18	2.95	3.29	.90	1.80	.96	.85	.60	—.10	.55	1.20	.85
26	1.09	2.87	2.60	.95	1.55	1.08	.78	.56	—.10	.90	1.78	.84
27	1.04	4.46	2.25	1.25	1.40	1.20	.68	.49	—.10	.35	1.80	.80
28	1.00	5.76	2.05	1.05	1.45	2.80	.58	.38	.00	.20	1.80	.76
29	1.00	7.25	1.96	.95	-------	2.85	.48	.28	.00	.15	1.72	.75
30	1.00	5.50	1.80	1.10	-------	2.40	.40	.20	.50	.15	1.60	.75
31	1.10	-------	1.50	.88	-------	2.65	-------	.16	-------	.35	1.60	-------

Note.—Stage-discharge relation Jan. 3, 4, 13-20 and Jan. 26 to Feb. 2 affected by ice. Gage height July 13-18 and Aug. 1 to Sept. 30 affected by changes at dam about 2,000 feet downstream from station, which caused about one foot more backwater than usual at the gage.

SUSQUEHANNA BASIN—STATION NO. 15

CLEARFIELD CREEK AT DIMELING

Location.—At single-span steel highway bridge, Dimeling, Clearfield County, about 400 feet downstream from the mouth of Little Clearfield Creek.

Drainage Area.—370 square miles.

Records Available.—October 2, 1913, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by John Olson. Elevation of gage zero, 1,145.56 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control. Left bank is high and not subject to overflow; right is low and is overflowed at extremely high stages. Bed at control riffle, about 250 feet below gage, is composed of coarse gravel and boulders; probably permanent.

Extremes of Discharge. Maximum open-water stage during the year, 12.0 feet observed at 11 a. m. November 29 (discharge, 9,880 second-feet); a stage of 12.96 feet was observed at 4 p. m. February 20, but the water was held back by an ice jam; minimum 3.32 feet at 4 p. m. September 28 and September 30 (discharge, 17 second-feet).

Ice.—Stage-discharge relation seriously affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 1,000 second-feet; fairly well defined between 1,000 and 3,000 second-feet and well defined from 3,000 to 11,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for intermediate stages when they are fair.

Discharge measurements of Clearfield Creek at Dimeling during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
29	June 3	H. J. McIntyre	4.65	2.0
30	Sept. 29a	do	3.38	20.4

a Wading measurement 200 feet above gage.

Daily Mean Gage Height, in feet, of Clearfield Creek at Dimeling, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.30	4.28	8.26	5.12	6.53	5.58	7.77	4.58	4.18	4.90	3.78	3.52
2	4.24	7.62	7.91	4.73	7.68	5.45	7.32	4.48	4.12	6.46	3.89	3.51
3	4.21	6.34	7.96	5.60	10.14	5.26	6.82	4.51	5.08	7.36	3.82	3.46
4	4.28	5.62	7.08	6.06	9.66	5.35	6.62	4.59	5.41	6.53	3.70	3.48
5	4.44	5.28	6.66	5.82	8.42	5.56	6.26	5.26	4.68	5.60	3.62	3.46
6	4.26	5.02	6.26	5.26	6.96	6.02	5.98	5.08	4.58	5.11	3.61	3.44
7	4.12	4.87	5.99	5.45	6.08	8.17	5.72	5.15	4.44	4.88	3.72	3.42
8	4.02	4.74	5.78	5.01	8.48	8.00	5.56	5.19	4.42	4.79	3.88	3.41
9	4.02	4.64	5.58	5.18	8.96	6.90	5.67	4.91	4.13	4.46	3.96	3.38
10	4.04	4.68	5.44	5.16	8.87	6.66	5.48	4.74	4.80	4.32	3.88	3.41
11	3.98	4.57	5.37	5.14	8.44	6.88	5.38	4.72	4.80	4.05	3.80	3.42
12	3.96	4.56	5.44	4.50	6.37	6.88	5.28	4.58	4.62	3.92	3.68	3.51
13	3.82	4.74	5.67	4.84	6.10	6.62	5.30	4.68	4.55	4.12	3.64	3.54
14	3.76	4.69	5.51	5.01	6.82	6.56	5.77	4.58	4.32	4.02	3.62	3.48
15	3.78	5.17	5.40	4.98	7.20	6.62	10.38	4.56	4.18	3.92	3.60	3.42
16	3.86	5.36	5.08	4.72	7.88	6.56	8.98	4.62	4.06	3.98	3.52	3.41
17	3.84	5.72	5.14	4.65	7.21	6.12	7.86	4.68	4.10	3.96	3.49	3.39
18	3.72	7.12	5.50	4.62	7.29	5.78	7.19	4.76	4.34	4.18	3.51	3.36
19	3.87	6.69	5.28	5.20	7.32	5.64	6.62	5.60	4.19	4.38	3.68	3.36
20	3.95	6.22	5.65	6.62	11.04	5.56	6.34	5.81	4.06	4.30	3.74	3.44
21	4.18	5.90	5.63	6.52	8.07	5.47	6.02	5.65	3.93	4.12	3.68	3.42
22	4.02	5.65	5.28	6.14	7.21	5.26	5.68	5.18	3.92	3.94	3.58	3.41
23	3.94	5.48	5.12	5.56	8.00	5.09	5.52	5.02	4.00	3.86	3.55	3.39
24	3.72	5.39	5.72	5.20	7.31	5.12	5.39	4.72	3.86	4.49	3.52	3.42
25	3.84	5.85	6.82	5.16	6.56	5.13	5.19	4.68	3.82	4.34	3.59	3.39
26	3.60	6.28	6.34	7.70	6.10	5.18	5.08	4.61	3.76	4.15	3.56	3.41
27	3.78	8.22	6.00	6.80	5.92	5.62	4.90	4.55	3.64	3.91	3.68	3.36
28	3.69	9.80	5.75	6.82	6.05	6.93	4.78	4.42	3.99	3.80	3.62	3.35
29	3.48	11.53	5.56	6.90	-------	6.78	4.66	4.32	4.90	3.72	3.54	3.34
30	3.78	9.67	5.07	6.92	-------	6.51	4.72	4.31	4.82	3.74	3.55	3.34
31	3.82	-------	4.96	6.50	-------	7.08	-------	4.22	-------	3.76	3.54	-------

Note:—Stage-discharge relation Jan. 26 to Feb. 20 affected by ice.

Daily discharge, in second-feet, of Clearfield Creek at Dimeling, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	172	172	3,180	430	360	675	2,560	250	150	355	72	38
2	161	2,320	2,680	302	1,200	592	2,000	220	129	1,260	89	37
3	150	1,120	2,800	675	1,400	492	1,520	220	430	2,100	78	32
4	172	675	1,800	980	1,100	540	1,340	250	565	1,260	61	34
5	208	515	1,420	790	550	648	1,120	492	285	675	51	32
6	161	390	1,120	492	500	915	915	430	250	430	49	29
7	129	338	915	592	550	3,040	730	450	208	355	64	27
8	109	302	790	390	420	2,800	618	470	195	320	88	26
9	109	268	675	470	340	1,600	702	355	140	208	102	23
10	119	285	592	450	340	1,420	620	302	320	172	88	26
11	105	235	540	450	400	1,600	565	285	320	119	75	27
12	102	235	592	220	750	1,600	515	250	250	95	58	37
13	78	302	702	338	1,000	1,340	515	285	235	129	53	41
14	69	285	620	390	850	1,340	760	250	172	109	51	34
15	72	450	565	390	500	1,340	6,560	235	150	95	48	27
16	85	540	430	285	320	1,340	4,140	250	119	105	38	26
17	81	730	450	268	280	980	2,680	285	129	102	35	24
18	64	1,800	648	250	360	790	1,900	302	184	150	37	21
19	86	1,420	515	470	1,000	702	1,340	675	150	195	58	21
20	100	1,040	702	1,340	3,000	648	1,120	790	119	172	67	29
21	150	850	702	1,260	2,920	592	915	702	96	129	58	27
22	109	702	515	980	1,900	492	730	470	95	98	46	26
23	98	620	430	648	2,800	430	620	390	109	85	42	24
24	64	565	730	470	2,000	430	565	285	85	220	38	27
25	81	820	1,520	450	1,340	450	470	285	78	184	47	24
26	48	1,120	1,120	300	980	470	430	250	69	140	43	26
27	72	3,040	915	320	850	675	375	235	53	93	58	21
28	60	5,440	760	360	915	1,600	320	195	107	75	51	20
29	34	8,790	648	400	-------	1,520	268	172	355	64	41	19
30	72	5,270	410	380	-------	1,260	285	172	320	67	42	19
31	78	-------	372	340	-------	1,800	-------	150	-------	69	41	-------

Note.—Discharge Jan. 26 to Feb. 20 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Bower and Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of Clearfield Creek at Dimeling, for the year ending Sept. 30, 1922

(Drainage area 370 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	208	34	103	0.278	0.32
November	8,790	172	1,350	3.65	4.07
December	3,180	372	963	2.60	3.00
January	1,340	220	512	1.38	1.59
February	3,060	280	1,030	2.78	2.90
March	3,040	430	1,100	2.97	3.42
April	6,560	268	1,240	3.35	3.74
May	790	150	334	.903	1.04
June	565	53	196	.530	.59
July	2,100	64	311	.841	.97
August	102	35	57.1	.154	.18
September	41	19	27.5	.074	.08
The year	8,790	19	598	1.62	21.90

SUSQUEHANNA BASIN—STATION NO. 16

DRIFTWOOD BRANCH SINNEMAHONING CREEK AT STERLING RUN

Location.—At three-span steel highway bridge, Sterling Run, Cameron County, about 300 feet upstream from mouth of Sterling Run.

Drainage Area.—270 square miles.

Records Available.—September 30, 1913, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by C. U. Lupro. Elevation of gage zero 894.60 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are low and subject to overflow during extremely high stages. Bed is composed of gravel. The control for low stages is at the first of a series of gravel riffles extending from 50 to 100 feet below the gage; probably permanent. The control for medium and high stages, which was at the first of a series of riffles extending from 300 to 500 feet below the gage, was changed on September 10, 1921, by a gravel bar deposited by flow from Sterling Run, and again on November 2, 1921, when a portion of the gravel bar was washed out.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 4.5 feet at 2 a. m. November 2 (discharge, 4,880 second-feet); minimum 0.58 foot at 3 p. m. September 30 (discharge, 22 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation changed November 2, 1921, and also affected by ice. Two rating curves used; fairly well defined between 20 and 10,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Driftwood Branch Sinnemahoning Creek at Sterling Run, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
37	Oct. 4	H. J. McIntyre	1.44	181
38	4	do	1.44	182
39	Mar. 8	do	3.38	2,280
40	June 5	do	1.84	513
41	5	J. M. Snavely	1.84	462
42	Aug. 30	do	.66	20.0
43	30a	do	.64	18.0

a Measurement made by wading 500 feet below gage.

Daily Mean Gage Height, in feet, of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1 50	2.25	2.68	1.91	1.62	1.74	2.98	1.40	1.40	1.20	0.68	0.63
2	1.42	4.16	2.52	1.70	1.88	1.64	2.76	1.36	1.50	1.16	.84	.63
3	1.36	3.24	2.39	1.56	2.03	1.62	2.54	1.35	2.30	1.21	.83	.65
4	1.45	2.50	2.15	1.75	1.75	1.57	2.53	1.61	2.12	1.46	1.06	.88
5	1.39	2.60	2.12	2.74	1.65	1.56	2.49	1.62	1.86	1.30	.80	.92
6	1.31	2.24	2.00	2.35	1.72	1.66	2.41	1.64	1.92	1.18	.71	.76
7	1.23	2.03	1.92	2.30	1.79	2.78	2.35	1.70	1.76	1.08	.70	.70
8	1.22	1.93	1.82	2.21	1.64	3.40	2.18	1.67	1.58	1.00	1.27	.68
9	1.26	1.84	1.72	2.04	1.60	2.70	2.10	1.62	1.54	.96	1.04	.66
10	1.22	2.22	1.67	1.88	1.61	2.37	2.08	1.59	1.88	.89	.84	.64
11	1.16	2.27	1.64	1.84	1.62	2.91	2.16	1.56	1.97	.83	.75	.72
12	1.40	2.38	1.61	1.71	1.66	2.95	2.43	1.52	2.44	.82	.72	1.41
13	1.50	2.16	1.61	1.50	1.64	2.74	2.37	1.47	2.18	.79	.70	1.00
14	1.47	2.08	1.55	1.62	1.55	2.68	2.32	1.42	1.88	.79	.68	.83
15	1.40	2.08	1.50	1.54	1.52	2.67	2.92	1.52	1.70	.78	.66	.78
16	1.37	2.13	1.32	1.56	1.48	2.46	2 80	1.47	1.54	.85	.70	.72
17	1.32	2.53	1.21	1.56	1.44	2.22	3.07	1.41	1.59	.84	.69	.70
18	1.30	3.72	1.66	1.65	1.58	2.04	4.00	1.48	1.96	.88	.68	.68
19	1.62	3.66	1.62	1.64	1.48	1.90	3.44	1.85	1.68	.98	.80	.67
20	1.82	3.15	1.58	1.86	2.43	1.84	2.96	2.26	1.56	.86	.76	.66
21	1.70	2.72	1.86	1.91	2.88	1.72	2.52	2.27	1.46	.76	.69	.64
22	1.66	2.48	1.82	1.66	2.26	1.69	2.28	2.22	1.38	.72	.66	.64
23	1.61	2.30	1.96	1.62	2.91	1.62	2.08	1.84	1.32	.70	.62	.64
24	1.54	2.30	1.98	1.74	2.86	1.55	1.94	1.76	1.20	.72	.64	.62
25	1.49	2.53	1.92	1.68	2.62	1.55	1.80	1.75	1.14	.72	.68	.60
26	1.42	2.55	1.84	1.62	2.17	1.60	1.73	1.88	1.11	.70	.79	.60
27	1.39	2.82	1.68	1.62	2.02	1.87	1.66	1.74	1.07	.70	.82	.59
28	1.33	4.08	1.60	1.58	1.82	3.73	1.56	1.58	1.29	.69	.80	.60
29	1.31	3.90	1.68	1.69	-------	3.96	1.48	1.50	1.42	.69	.74	.60
30	1.28	3.04	1.68	1.86	-------	3.28	1.46	1.49	1.28	.66	.65	.58
31	1.38	-------	1.66	1.65	-------	2.88	-------	1.40	-------	.62	-------	-------

Note.—Stage-discharge relation Dec. 29 to Jan. 3, Jan. 5-19, Jan. 23 to Feb. 1, Feb. 9-12 and 15-19 affected by ice.
Gage height not observed on Aug. 31.

Daily discharge, in second-feet, of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	212	794	1,500	120	280	408	1,960	210	210	125	26	24
2	176	4,250	1,210	120	522	341	1,580	190	260	113	43	24
3	151	2,320	1,070	160	680	328	1,280	185	950	128	42	25
4	190	1,210	782	415	415	298	1,280	322	730	240	85	49
5	163	1,210	730	750	348	293	1,210	328	504	160	37	56
6	131	892	630	800	394	354	1,070	341	558	119	28	33
7	102	680	558	600	443	1,650	1,010	380	422	90	27	27
8	99	567	468	460	341	2,690	835	360	304	70	150	26
9	112	486	394	340	240	1,500	730	328	282	63	80	25
10	99	835	360	260	180	1,010	730	310	522	50	43	25
11	80	892	341	240	200	1,800	782	293	603	46	32	29
12	167	1,070	322	180	320	1,880	1,140	271	1,140	40	29	215
13	212	782	322	160	341	1,580	1,010	245	835	36	27	70
14	198	730	288	140	288	1,500	950	220	522	36	26	42
15	167	730	260	140	200	1,420	1,800	271	380	35	25	35
16	155	782	170	140	180	1,140	1,650	245	282	44	27	29
17	135	1,280	128	140	140	835	2,140	215	310	43	27	27
18	127	3,260	354	180	140	680	3,850	250	594	49	26	26
19	274	3,260	328	260	180	540	2,690	495	267	66	37	26
20	408	2,320	304	504	1,140	486	1,880	892	203	46	33	25
21	322	1,500	504	549	1,800	394	1,210	832	240	33	27	25
22	298	1,210	468	354	892	374	950	835	200	29	25	25
23	268	950	594	260	1,800	328	730	486	170	27	24	25
24	232	950	612	200	1,720	288	576	422	125	29	25	24
25	208	1,280	558	180	1,350	288	450	415	107	29	26	23
26	176	1,280	486	140	782	315	401	522	98	27	36	23
27	163	1,650	367	140	630	513	354	408	88	27	40	23
28	139	4,050	315	140	468	6,260	293	304	156	27	37	23
29	131	3,650	240	140	-------	3,850	250	260	220	27	31	23
30	120	1,960	180	140	-------	2,500	240	255	153	25	25	22
31	159	-------	140	180	-------	1,800	-------	210	-------	24	25	-------

Note.—Discharge Dec. 29 to Jan. 3, Jan. 5-19, Jan. 23 to Feb. 1, Feb. 9-12 and 15-19 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Allegheny River at Red House, Clearfield Creek, at Dimeling and Pine Creek at Cedar Run. Discharge Aug. 31 interpolated, because of no gage height record.

Monthly discharge of Driftwood Branch Sinnemahoning Creek at Sterling Run, for the year ending Sept. 30, 1922

(Drainage area 270 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	408	80	180	0.667	0.77
November	4,250	486	1,560	5.78	6.45
December	1,500	128	483	1.79	2.06
January	800	120	275	1.02	1.18
February	1,800	140	586	2.17	2.26
March	3,850	288	1,120	4.15	4.78
April	3,850	240	1,170	4.33	4.83
May	892	185	366	1.36	1.57
June	1,140	88	388	1.44	1.61
July	240	24	61.4	.227	.26
August	150	24	37.8	.140	.16
September	215	22	35.8	.133	.15
The year	4,250	22	518	1.92	26.08

SUSQUEHANNA BASIN—STATION NO. 17

DRIFTWOOD BRANCH SINNEMAHONING CREEK AT DRIFTWOOD

Location.—At two-span steel highway bridge, Driftwood, Cameron County, about 1,000 feet above confluence of Driftwood Branch with Bennett Branch.

Drainage Area.—316 square miles.

Records Available.—July 1, 1895, to February 28, 1903, and July 22, 1918, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to quarter tenths twice daily by H. B. Mutthersbough; during high stages more frequently. Elevation of gage zero 791.30 feet, United States Geological Survey datum.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Stage-discharge relation affected by backwater from Bennett Branch Sinnemahoning Creek at medium and high stages.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 5.7 feet at 8 p. m. November 28; minimum, 0.10 foot from 7 a. m. August 23 to 7 a. m. August 25 and from 4 p. m. September 29 to 4 p. m. September 30.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Monthly discharge of Turtle Creek near Trafford, for the year ending Sept. 30, 1922
the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.92	1.52	2.92	1.55	2.25	2.05	3.05	1.09	1.31	1.10	0.20	0.20
2	1.72	4.29	2.52	1.47	2.25	1.93	2.40	1.04	1.37	.98	.45	.40
3	1.61	3.32	2.22	1.50	2.25	1.60	2.15	1.90	1.95	.94	.80	.60
4	1.52	2.67	1.77	1.87	2.25	1.60	2.05	2.45	1.77	.88	.70	.47
5	1.62	2.22	1.47	3.80	2.25	1.40	1.95	2.09	1.70	.80	.54	.38
6	1.46	2.02	1.38	3.80	2.25	1.30	2.47	1.75	1.68	.68	.49	.70
7	1.25	1.86	1.34	2.35	2.25	1.45	2.65	1.65	1.58	.56	.38	.46
8	1.04	1.57	1.26	1.80	2.25	3.10	2.30	1.61	1.45	.46	.65	.38
9	.92	1.42	1.18	1.59	2.25	2.95	2.05	1.53	1.28	.41	.88	.30
10	.84	1.62	1.11	1.43	2.25	2.40	1.75	1.43	1.70	.36	.74	.23
11	.76	1.97	1.04	1.47	2.25	3.10	1.90	1.34	1.92	.28	.55	.25
12	.70	2.17	1.27	1.65	2.25	3.45	2.25	1.27	2.65	.20	.46	1.01
13	1.12	2.42	1.37	1.57	2.25	3.10	2.45	1.13	2.30	.42	.42	.93
14	1.34	2.92	1.82	1.47	2.25	2.97	2.60	1.04	1.85	.32	.39	.75
15	1.07	2.92	1.73	1.40	2.25	2.80	2.93	1.50	1.54	.26	.27	.63
16	.98	2.82	1.61	1.45	2.25	2.57	3.05	1.55	1.34	.20	.30	.40
17	.92	3.27	1.52	1.45	2.25	2.35	3.40	1.55	1.45	.12	.21	.37
18	.84	3.97	2.02	2.63	2.25	2.10	4.25	1.99	2.05	.70	.18	.33
19	1.22	3.62	2.47	2.95	2.35	2.03	3.95	2.15	1.77	1.00	.45	.29
20	1.52	3.37	2.33	2.25	2.60	1.93	3.85	2.55	1.66	.82	.35	.25
21	1.58	2.87	2.08	1.67	2.65	1.93	3.05	2.25	1.55	.68	.21	.23
22	1.40	2.17	2.00	1.45	2.90	2.15	2.90	2.10	1.42	.55	.19	.20
23	1.27	1.67	1.90	2.88	3.55	2.05	2.45	1.83	1.15	.40	.10	.18
24	1.16	1.77	1.87	2.80	2.90	1.88	2.14	1.71	.98	.60	.10	.18
25	1.10	1.92	1.97	2.45	2.40	1.73	2.04	1.71	1.00	.79	.15	.17
26	1.01	2.62	1.82	2.25	2.15	1.65	1.83	2.03	.98	.65	.60	.14
27	.96	3.62	1.57	2.25	2.30	2.03	1.60	1.90	.95	.53	.50	.13
28	.91	4.77	1.42	2.25	2.30	4.15	1.37	1.77	1.15	.38	.45	.10
29	.84	4.72	1.62	2.25	-------	4.03	1.29	1.63	1.25	.28	.40	.09
30	.81	3.77	1.54	2.25	-------	2.95	1.20	1.51	1.25	.20	.30	.08
31	.92	-------	1.57	2.25	-------	3.15	-------	1.44	-------	.20	.20	-------

Note.—Stage-discharge relation Dec. 29 to Jan. 5, 11-18 and Jan. 23 to Feb 22 affected by ice.

SUSQUEHANNA BASIN—STATION NO. 18

WEST BRANCH SUSQUEHANNA RIVER AT RENOVO

Location.—At three-span steel highway bridge, Eighth Street, Renovo, Clinton County.

Drainage Area.—2,990 square miles.

Records Available.—July 1, 1895, to December 31, 1903, and October 1, 1905, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by J. H. Baird. Elevation of gage zero 634.03 feet United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of rocks. Control is at the first of a series of riffles about 1,000 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.2 feet at noon November 29 (discharge, 50,700 second-feet); minimum, —0.09 foot from 5 p. m. September 26 to 5 p. m. September 30 (discharge, 538 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 200 and 2,000 second-feet and fairly well defined from 2,000 to 75,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for medium and high stages when they are fair.

Discharge measurements of West Branch Susquehanna River at Renovo, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
46	Oct. 4	J. M. Snavely	1.19	1,910
47	June 6	H. J. McIntyre	2.52	4,720

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Renovo, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.56	0.92	7.20	2.00	1.70	3.02	5.63	1.57	1.36	1.43	—0.04	—0.05
2	1.38	5.38	5.95	1.80	1.75	2.75	5.58	1.41	1.25	1.70	—.02	—.05
3	1.23	5.97	5.55	1.63	2.50	2.47	4.95	1.37	2.43	2.32	.01	—.05
4	1.19	4.50	5.05	1.78	3.18	2.35	4.62	1.56	3.15	3.47	.02	—.04
5	1.10	3.50	4.50	2.90	2.58	2.37	4.49	1.78	2.96	2.66	.08	—.05
6	1.19	3.16	4.08	3.80	2.17	2.47	4.22	1.80	2.56	2.07	.00	—.05
7	1.01	2.65	3.65	3.35	1.92	3.80	3.98	1.79	2.28	1.68	.00	—.06
8	.92	2.39	3.27	2.58	1.70	7.13	3.67	1.91	2.00	1.30	.02	—.06
9	.84	2.15	2.95	2.42	1.57	5.85	3.41	1.86	1.82	1.07	.02	—.06
10	.75	2.46	2.75	2.40	1.45	4.75	3.25	1.87	1.57	.91	.01	—.06
11	.63	2.52	2.55	2.31	1.38	5.16	3.36	1.67	2.45	.70	.02	—.07
12	.60	2.60	2.47	1.87	1.44	6.15	3.31	1.57	3.61	.54	.00	—.05
13	.57	2.47	2.46	1.99	1.72	5.38	3.30	1.41	2.88	.45	—.02	—.03
14	.61	2.42	2.42	4.49	1.95	5.05	3.38	1.40	2.43	.34	—.03	—.02
15	.59	2.50	2.25	4.60	1.80	5.02	5.63	1.76	2.05	.25	—.04	—.04
16	.55	2.72	2.03	4.72	-------	4.92	8.16	2.00	1.66	.14	—.04	—.04
17	.51	3.07	1.80	4.50	-------	4.44	6.68	1.88	1.67	.10	—.05	—.05
18	.47	5.28	2.05	4.16	-------	3.82	6.21	1.87	2.59	.20	—.04	—.06
19	.56	6.32	3.19	4.55	-------	3.24	5.95	2.50	2.10	.54	—.03	—.06
20	.95	5.31	3.41	4.72	-------	3.01	5.45	3.50	1.78	.53	—.02	—.07
21	.89	4.72	3.22	3.24	5.00	2.90	4.59	3.74	1.49	.42	—.03	—.07
22	.98	3.72	3.00	2.85	4.28	2.60	4.01	3.52	1.24	.33	—.03	—.07
23	1.02	2.70	2.72	2.40	4.57	2.40	3.50	3.21	1.07	.24	—.04	—.08
24	.93	3.22	2.66	1.80	5.35	2.20	3.24	2.86	.97	.12	—.04	—.08
25	.89	3.71	4.15	1.60	5.47	2.11	2.90	2.62	.86	.01	—.04	—.08
26	.81	4.06	3.72	1.65	4.50	2.28	2.57	3.08	.77	—.03	—.04	—.08
27	.71	4.78	3.18	1.70	3.83	2.57	2.26	2.80	.65	—.04	—.04	—.09
28	.62	8.89	2.95	1.85	3.41	4.78	2.17	2.44	.78	.01	—.02	—.09
29	.53	10.88	2.71	2.00	-------	6.39	2.04	2.07	1.00	—.01	—.04	—.09
30	.49	9.29	2.36	2.00	-------	5.62	1.77	1.78	1.00	—.02	—.04	—.09
31	.46	-------	2.02	1.85	-------	5.16	-------	1.56	-------	—.03	—.05	-------

Note.—Stage-discharge relation Jan. 13-21, Jan. 25 to Feb. 2 and Feb. 16-21 affected by ice. Gage height Feb. 16-20 not observed.

Daily discharge, in second-feet, of West Branch Susquehanna River at Renovo, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,620	1,590	23,800	3,320	2,200	5,650	15,100	2,620	2,300	2,300	578	570
2	2,300	14,200	17,100	2,950	2,400	5,100	15,100	2,300	2,000	2,780	594	570
3	2,000	17,100	15,100	2,620	4,350	4,350	12,600	2,300	4,120	3,910	610	570
4	2,000	10,600	12,600	2,950	6,220	4,120	11,000	2,620	6,220	7,100	610	578
5	1,860	7,100	10,600	5,370	4,590	4,120	10,600	2,950	5,650	4,840	700	570
6	1,860	6,220	9,100	8,050	3,710	4,350	9,450	2,950	4,590	3,510	610	570
7	1,720	4,590	7,400	6,800	3,130	8,050	8,750	2,950	3,910	2,780	610	562
8	1,590	4,120	6,510	4,590	2,780	23,200	7,700	3,130	3,320	2,150	610	562
9	1,520	3,710	5,650	4,120	2,620	16,100	6,800	3,130	2,950	1,860	610	562
10	1,400	4,350	5,100	4,120	2,300	11,800	6,220	3,130	2,620	1,590	610	562
11	1,280	4,350	4,590	3,910	2,300	13,400	6,800	2,780	4,120	1,340	610	554
12	1,220	4,590	4,350	3,130	2,300	18,100	6,510	2,620	7,400	1,160	610	570
13	1,160	4,350	4,350	2,600	2,780	14,200	6,510	2,300	5,370	1,060	594	586
14	1,220	4,120	4,120	2,400	3,320	12,600	6,800	2,300	4,120	950	586	594
15	1,220	4,350	3,710	2,600	2,950	12,600	15,100	2,950	3,320	850	578	578
16	1,160	4,840	3,320	3,000	2,600	12,200	29,800	3,320	2,780	750	578	578
17	1,110	5,930	2,950	2,600	2,400	10,200	20,800	3,130	2,780	700	570	570
18	1,060	13,800	3,320	2,200	2,200	8,050	18,100	3,130	4,590	800	578	562
19	1,160	18,600	6,220	2,400	2,400	6,220	17,100	4,350	3,510	1,160	586	562
20	1,660	13,800	6,800	2,600	3,800	5,650	14,200	7,100	2,950	1,100	594	554
21	1,590	11,400	6,220	3,600	6,000	5,370	11,000	7,700	2,460	1,000	586	554
22	1,720	7,700	5,650	5,100	9,800	4,590	8,750	7,100	2,000	950	586	554
23	1,720	4,840	4,840	4,120	11,000	4,120	7,100	6,220	1,860	850	578	546
24	1,660	6,220	4,840	2,950	14,200	3,710	6,220	5,370	1,660	700	578	546
25	1,590	7,700	9,450	2,400	14,600	3,510	5,370	4,590	1,520	610	578	546
26	1,460	8,750	7,700	2,200	10,600	3,910	4,590	5,930	1,400	586	578	546
27	1,340	11,800	6,220	2,200	8,050	4,590	3,910	5,100	1,280	578	578	538
28	1,220	34,600	5,650	2,400	6,800	11,800	3,710	4,120	1,460	610	594	538
29	1,160	48,600	4,840	2,400	-------	19,100	3,320	3,510	1,720	602	578	538
30	1,110	57,400	4,120	2,400	-------	15,100	2,950	2,950	1,720	594	578	538
31	1,060	-------	3,320	2,400	-------	13,400	-------	2,620	-------	586	570	-------

Note.—Discharge Jan. 13-21, Jan. 25 to Feb. 2 and Feb. 16-21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Williamsport.

Monthly discharge of West Branch Susquehanna River at Renovo, for the year ending Sept. 30, 1922
(Drainage area 2,990 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,620	1,060	1,510	0.505	0.58
November	48,600	1,590	11,000	3.68	4.11
December	23,800	2,950	7,080	2.37	2.73
January	8,050	2,200	3,370	1.13	1.30
February	14,600	2,200	5,090	1.70	1.77
March	23,200	3,510	9,330	3.12	3.60
April	29,800	2,950	10,100	3.38	3.77
May	7,700	2,300	3,780	1.26	1.45
June	7,400	1,280	3,190	1.07	1.19
July	7,100	578	1,630	.545	.63
August	700	570	594	.199	.23
September	594	538	561	.188	.21
The Year	48,600	538	4,750	1.59	21.57

SUSQUEHANNA BASIN—STATION NO. 19

WEST BRANCH SUSQUEHANNA RIVER AT LOCK HAVEN

Location.—At four-span steel highway bridge, Jay Street, Lock Haven, Clinton County.

Drainage Area.—3,350 square miles.

Records Available.—October 1, 1913, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by E. A. McGill; during high stages more frequently. Elevation of gage zero 535.00 feet, United States Geological Survey datum. Previous to October 4, 1921, a painted staff gage on right side of first pier was read to half tenths; elevation of gage zero was 540.95 feet. The standard chain gage atached to downstream side of the wooden covered bridge, for the purpose of obtaining low stages, was destroyed by fire on January 27, 1919.

Channel and Control.—Both banks are high and not subject to overflow. Control for medium and high stages is the remaining portion of an old dam about 2,300 feet below gage; probably permanent.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 14.5 feet at 6 p. m. November 29; minimum 0.90 foot at 5 p. m. September 27 and from 5 p. m. September 28 to 5 p. m. September 30.

Ice.—Stage-discharge relation seriously affected by ice. Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Lock Haven, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	2.20	9.47	3.58	5.58	4.50	6.82	3.12	2.99	2.76	1.48	1.25
2	-------	5.23	7.75	3.06	5.60	4.21	6.80	3.02	2.88	2.60	1.46	1.24
3	-------	8.02	7.24	3.17	6.11	3.95	6.52	2.92	3.37	3.28	1.73	1.23
4	2.65	6.21	6.70	3.43	8.09	3.76	6.05	2.96	4.73	4.41	1.81	1.29
5	2.64	5.27	6.08	4.10	7.24	3.75	5.92	3.18	4.52	4.32	1.82	1.27
6	2.57	4.65	5.59	4.87	6.52	3.83	5.64	3.56	4.11	3.66	1.75	1.30
7	2.50	4.21	5.10	4.82	6.19	4.89	5.32	3.49	3.79	3.24	1.62	1.37
8	2.40	3.86	4.70	5.20	5.82	8.81	5.02	3.50	3.50	2.93	1.62	1.24
9	2.29	3.58	4.38	7.97	5.38	7.71	4.78	3.46	3.28	2.70	1.58	1.15
10	2.25	3.56	4.13	8.50	5.00	6.45	4.69	3.36	3.19	2.50	1.85	1.12
11	2.19	3.77	3.94	8.07	5.04	6.09	4.60	3.24	3.32	2.34	1.70	1.11
12	2.13	3.85	3.82	7.22	5.28	7.32	4.72	3.16	4.65	2.24	1.64	1.53
13	2.16	3.90	3.78	6.85	5.68	6.91	4.74	3.07	4.58	2.09	1.52	1.34
14	2.17	3.74	3.79	6.58	5.59	6.58	4.60	2.99	4.00	2.02	1.44	1.62
15	2.15	2.72	3.65	6.45	5.37	6.58	5.47	2.96	3.62	1.93	1.35	1.41
16	2.07	3.93	3.40	6.90	5.36	6.38	9.88	3.45	3.28	1.84	1.30	1.29
17	2.03	4.19	3.30	6.72	4.84	5.79	8.36	3.35	3.04	1.82	1.24	1.30
18	1.99	6.05	3.64	6.46	4.41	5.25	7.96	3.34	3.30	1.83	1.21	1.19
19	2.05	7.96	4.56	6.74	4.26	4.80	7.70	3.66	3.66	1.96	1.25	1.12
20	2.23	7.11	4.86	7.09	4.74	4.55	6.76	4.70	3.30	2.12	1.31	1.09
21	2.39	6.28	4.59	8.24	7.00	4.36	6.03	5.30	3.04	2.08	1.45	1.05
22	2.50	5.65	4.46	8.12	8.80	4.10	5.46	5.00	2.84	1.97	1.41	1.01
23	2.50	5.14	4.10	7.10	9.00	3.82	4.92	4.62	2.60	1.80	1.32	.99
24	2.47	4.78	4.10	6.21	9.80	3.62	4.58	4.28	2.56	1.73	1.31	.96
25	2.37	5.15	4.50	5.68	7.03	3.52	4.28	4.04	2.44	1.69	1.33	.97
26	2.26	5.30	5.38	5.40	5.88	3.56	4.02	4.51	2.33	1.68	1.28	.93
27	2.16	5.96	4.68	5.52	5.30	3.76	3.84	4.48	2.27	1.66	1.34	.91
28	2.08	9.89	4.44	5.54	4.78	5.03	3.60	3.97	2.25	1.77	1.35	.91
29	2.03	14.03	4.18	5.60	-------	7.70	3.42	3.66	2.46	1.63	1.40	.90
30	2.01	12.50	4.10	5.84	-------	7.20	3.27	3.36	2.58	1.49	1.34	.90
31	1.96	-------	3.55	5.71	-------	6.59	-------	3.21	-------	1.45	1.28	-------

Note.—Gage height Oct. 1-3 not observed. Stage-discharge relation Dec. 25 to Jan. 5 and Jan. 8 to Feb. 24 affected by ice.

SUSQUEHANNA BASIN—STATION NO. 20

BALD EAGLE CREEK AT MILESBURG

Location.—At two-span Pennsylvania Railroad bridge, Milesburg, Centre County, about 1,000 feet above mouth of Spring Creek.

Drainage Area.—140 square miles.

Records Available.—February 6, 1911, to September 30, 1922.

Gage.—Staff fastened to downstream end of bridge pier; read by P. H. Haupt.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high, steep and rocky; left is low and subject to overflow at extremely high stages. Control is at a riffle about 100 feet upstream from the mouth of Spring Creek, where bed is composed of gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph 7.0 feet at 4 a. m. November 29 (discharge, about 7,750 second-feet); minimum, 0.05 foot on August 13 and several days in September (discharge, 12 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 2,000 second-feet. Gage read to quarter tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

Discharge measurements of Bald Eagle Creek at Milesburg, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
30	Oct. 5	J. M. Snavely	0.60	56.0
31	June 2	do	0.69	78.8

Daily Mean Gage Height, in feet, of Bald Eagle Creek at Milesburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.42	1.18	2.38	1.05	1.38	1.38	2.49	0.70	0.45	0.73	0.76	0.22
2	.32	2.25	2.21	1.22	2.25	1.29	3.48	.65	.74	1.50	.42	.25
3	.52	1.36	2.42	1.32	3.40	1.12	2.70	.62	1.29	1.40	.34	.22
4	.56	.99	2.15	1.38	2.70	1.12	2.18	.68	.85	1.05	.22	.26
5	.42	.85	1.95	1.95	2.45	1.48	1.86	1.27	.68	.91	.15	.32
6	.34	.75	1.75	1.68	2.32	2.40	1.72	2.95	.64	.76	.15	.25
7	.30	.65	1.55	1.30	2.05	3.80	1.55	1.90	.58	.62	.15	.20
8	.30	.52	1.42	1.20	1.75	2.80	1.35	1.50	.54	.45	.15	.32
9	.30	.70	1.32	1.12	1.58	2.25	1.24	1.29	.50	.38	.14	.26
10	.25	.72	1.22	1.12	1.48	2.22	1.24	1.18	.58	.35	.12	.22
11	.18	.62	1.14	1.28	1.55	2.92	1.18	1.05	.62	.32	.10	.18
12	.32	.82	1.10	1.50	1.62	2.70	1.22	.92	.52	.32	.07	1.31
13	.26	.72	1.15	1.48	1.45	2.28	1.12	.82	.46	.32	.05	.65
14	.18	.71	1.02	1.40	1.45	2.39	1.65	.65	.42	.26	.21	.42
15	.14	.86	.94	1.40	1.70	2.34	4.77	1.48	.36	.22	.26	.32
16	1.00	1.01	.88	1.38	1.64	1.92	2.80	1.08	.32	.18	.24	.28
17	.60	1.54	.97	1.30	1.52	1.61	2.60	.95	.36	.20	.20	.22
18	.31	2.28	3.34	1.30	1.42	1.42	2.31	1.81	.95	.21	.21	.18
19	.30	1.88	2.35	1.45	1.70	1.32	1.85	3.18	.62	.36	.24	.16
20	.32	1.70	1.78	1.88	2.56	1.26	1.65	1.98	.52	.32	.20	.25
21	.25	1.40	1.38	1.78	3.18	1.22	1.52	1.68	.42	.25	.20	.18
22	.24	1.24	1.22	1.65	4.05	1.12	1.42	1.40	.35	.20	.23	.12
23	.18	1.12	1.31	1.48	4.08	1.02	1.28	1.21	.28	.55	.18	.10
24	.12	1.08	1.55	1.35	3.35	.92	1.22	1.08	.22	.78	.25	.07
25	.16	1.12	1.54	1.18	2.42	.98	1.12	1.00	.24	.30	.35	.05
26	.15	1.42	1.48	1.08	2.08	.95	1.02	.92	.22	.16	.42	.05
27	.15	2.72	1.35	1.00	1.75	1.70	.92	.82	.32	.14	.45	.05
28	.10	5.12	1.15	1.00	1.55	2.62	.85	.72	.54	.10	.42	.05
29	.10	5.60	1.02	1.00	-------	1.99	.78	.65	.79	.10	.34	.05
30	.12	3.12	.96	1.15	-------	1.65	.74	.55	.45	.10	.30	.05
31	.16	-------	.92	1.28	-------	1.80	-------	.50	-------	.15	.26	-------

Note.—Stage-discharge relation Jan. 1 to Feb. 18 affected by ice.

Daily discharge, in second-feet, of Bald Eagle Creek at Milesburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	137	580	90	120	175	640	67	40	71	74	22
2	30	498	470	100	200	155	1,590	61	72	198	38	24
3	47	165	580	120	420	121	770	57	155	175	31	22
4	51	106	445	140	480	121	470	65	85	114	22	25
5	38	85	352	160	280	198	310	146	65	93	18	30
6	31	73	272	140	200	580	255	965	60	74	18	24
7	28	61	212	110	160	1,990	212	330	53	57	18	21
8	28	47	175	100	150	840	165	198	49	40	18	30
9	28	67	155	90	140	498	146	155	45	34	17	25
10	24	69	137	90	130	470	146	137	53	32	16	22
11	20	57	129	90	160	920	137	114	57	30	15	34
12	30	82	121	90	200	770	137	95	47	30	14	155
13	25	69	129	110	150	525	121	82	41	30	12	61
14	20	68	106	130	130	580	240	61	38	25	22	38
15	17	87	98	140	140	552	3,560	198	33	22	25	30
16	106	106	89	110	150	330	840	121	30	20	24	27
17	55	212	102	90	120	226	700	99	33	21	21	22
18	29	525	1,400	100	130	175	525	290	99	22	22	20
19	28	330	552	120	255	155	310	1,220	57	33	24	19
20	30	255	290	180	670	146	240	375	47	30	21	24
21	24	175	175	180	1,220	137	198	255	38	24	21	20
22	24	146	137	140	2,280	121	175	175	32	21	23	16
23	20	121	155	110	2,430	106	155	137	27	50	20	15
24	16	121	212	100	1,400	95	137	121	22	77	24	14
25	19	121	212	95	580	103	121	106	24	28	32	12
26	18	175	198	90	420	99	106	95	22	19	38	12
27	18	770	165	85	272	255	95	82	30	17	40	12
28	15	4,070	129	85	212	700	85	69	49	15	38	12
29	15	5,030	106	90	-------	375	77	61	78	15	31	12
30	16	1,110	100	90	-------	240	72	50	40	15	28	12
31	19	-------	95	110	-------	290	-------	45	-------	18	25	-------

Note.—Discharge Jan. 1 to Feb. 18 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Bald Eagle Creek at Beech Station, Little Juniata River at Tyrone and Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of Bald Eagle Creek at Milesburg, for the year ending Sept. 30, 1922

(Drainage area 140 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	106	15	29.3	0.209	0.24
November	5,030	47	498	3.56	3.97
December	1,400	89	261	1.86	2.14
January	180	85	112	.800	.92
February	2,430	120	471	3.36	3.50
March	1,990	95	389	2.78	3.20
April	3,560	72	424	3.03	3.38
May	1,220	45	195	1.39	1.60
June	155	22	50.7	.362	.40
July	198	15	46.8	.334	.39
August	74	12	25.5	.182	.21
September	155	12	27.1	.194	.22
The Year	5,030	12	208	1.49	20.17

SUSQUEHANNA BASIN—STATION NO. 21

BALD EAGLE CREEK AT BEECH CREEK STATION

Location.—At three-span steel highway bridge, Beech Creek Station, Pennsylvania Railroad, Clinton County.

Drainage Area.—565 square miles.

Records Available.—June 24, 1910, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by G. A. Rodgers.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left bank subject to overflow at extremely high stages. Bed is composed of gravel and rocks. Control is at a riffle, about 1,000 feet below gage, where there is a pronounced fall; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 9.5 feet at 1 a. m. November 29 (discharge, about 13,700 second-feet); minimum, 1.57 feet September 28 (discharge, 135 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 800 second-feet and fairly well defined between 800 and 10,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Bald Eagle Creek at Beech Creek Station during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
36	Oct. 5	H. J. McIntyre	2.01	330
37	Nov. 30a	J. M. Snavely	5.66	4,450
38	Mar. 9	H. J. McIntyre	4.26	2,800
39	June 9	J. M. Snavely	2.32	571
40	Aug. 31	do	1.70	196

a Measurement made by surface method.

Daily Mean Gage Height, in feet, of Bald Eagle Creek at Beech Creek Station, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.03	2.04	4.48	2.48	2.95	3.07	4.60	2.31	2.30	2.02	1.85	1.76
2	1.99	3.39	4.05	2.53	3.08	2.98	4.13	2.28	2.33	2.66	1.98	1.69
3	2.05	2.57	4.36	2.73	3.59	2.83	3.65	2.33	2.85	2.92	1.94	1.68
4	2.14	2.39	4.00	2.64	2.82	2.85	3.69	2.40	2.65	2.58	1.86	1.69
5	2.04	2.30	3.70	2.86	2.63	2.88	3.37	2.50	2.55	2.39	1.84	1.71
6	1.96	2.24	2.46	2.72	2.55	3.31	3.24	4.28	2.47	2.26	1.78	1.68
7	1.91	2.17	3.22	2.33	2.67	4.74	3.13	3.31	2.44	2.19	1.79	1.66
8	1.92	2.10	3.00	2.13	2.42	5.19	3.04	2.89	2.35	2.12	1.84	1.66
9	1.90	2.05	2.90	2.32	2.31	4.23	2.96	2.72	2.32	2.09	1.80	1.64
10	1.88	2.16	2.82	2.30	2.33	3.91	2.92	2.64	2.33	2.02	1.77	1.62
11	1.90	2.28	2.72	2.32	2.38	4.27	2.82	2.56	2.30	2.00	1.74	1.60
12	1.93	2.26	2.69	2.54	2.83	4.39	2.80	2.49	2.45	1.96	1.76	2.22
13	1.88	2.22	2.66	2.85	2.47	4.07	2.68	2.44	2.23	2.00	1.71	1.90
14	1.82	2.24	2.60	2.90	2.29	4.03	2.70	2.37	2.19	1.92	1.75	1.74
15	1.76	2.21	2.50	2.96	2.29	4.07	6.12	2.63	2.17	1.90	1.77	1.70
16	1.78	2.26	2.45	2.98	2.27	3.75	4.90	2.62	2.10	1.89	1.72	1.69
17	1.80	2.47	2.70	2.99	2.38	3.43	4.33	2.48	2.16	1.88	1.70	1.64
18	1.81	3.35	4.57	2.92	2.42	3.22	4.10	2.77	2.69	1.96	1.73	1.64
19	1.92	3.16	3.88	3.04	2.21	3.10	3.68	4.11	2.26	2.09	1.68	1.66
20	1.90	3.15	3.50	2.60	2.58	3.00	3.52	3.87	2.20	1.88	1.71	1.66
21	1.88	2.90	3.24	2.54	3.66	2.91	3.30	3.67	2.12	1.84	1.64	1.66
22	1.86	2.80	2.98	2.28	4.26	2.75	3.11	3.31	2.11	1.82	1.70	1.64
23	1.89	2.68	2.92	2.21	5.24	2.62	2.92	3.05	2.04	1.80	1.69	1.66
24	1.80	2.60	3.00	2.90	5.63	2.57	2.84	2.85	2.00	1.97	1.66	1.59
25	1.78	2.59	2.96	2.92	4.37	2.57	2.74	2.86	2.00	1.89	1.71	1.66
26	1.76	2.65	2.86	3.00	3.79	2.51	2.66	2.94	1.98	1.80	1.69	1.60
27	1.75	3.48	2.74	2.98	3.57	2.73	2.57	2.73	1.96	1.82	1.71	1.58
28	1.80	5.52	2.64	3.10	3.39	3.60	2.50	2.61	2.03	1.82	1.75	1.57
29	1.78	8.87	2.52	3.16	-------	3.39	2.42	2.49	2.10	1.81	1.71	1.58
30	1.78	6.02	2.38	3.02	-------	3.24	2.38	2.42	2.14	1.76	1.69	1.59
31	1.80	-------	2.46	2.98	-------	3.57	-------	2.34	-------	1.72	1.70	-------

Note.—Stage-discharge relation Jan. 11-19 and Jan. 24 to Feb. 2 affected by ice.

Daily discharge, in second-feet, of Bald Eagle Creek at Beech Creek Station, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	365	365	2,820	665	460	1,140	2,970	560	525	335	255	185
2	330	1,420	2,140	702	800	1,060	2,270	525	560	778	324	181
3	365	702	2,680	855	1,650	935	1,650	560	935	975	302	177
4	428	595	2,140	778	895	935	1,770	595	778	740	260	181
5	365	525	1,770	935	778	975	1,420	665	702	595	250	190
6	313	492	1,530	815	702	1,320	1,240	2,540	630	492	221	177
7	286	428	1,240	560	778	3,120	1,140	1,320	630	460	226	169
8	291	395	1,060	428	595	3,970	1,060	975	560	395	250	169
9	280	365	975	525	525	2,400	1,020	815	525	395	230	161
10	270	428	895	525	560	2,020	975	778	560	335	216	153
11	280	525	815	420	595	2,540	895	702	595	335	203	145
12	296	492	815	360	935	2,680	895	665	630	313	212	460
13	270	460	778	360	630	2,270	815	630	492	335	190	280
14	240	492	740	500	525	2,140	815	560	460	291	208	203
15	212	460	665	550	525	2,270	5,590	778	428	280	216	185
16	221	492	630	500	492	1,900	3,450	740	395	275	194	181
17	230	630	815	360	595	1,420	2,540	665	428	270	185	161
18	235	1,420	2,970	420	595	1,240	2,270	855	815	313	199	161
19	291	1,240	2,020	606	460	1,140	1,770	2,270	492	335	177	169
20	280	1,240	1,530	740	740	1,060	1,530	2,020	460	270	190	169
21	270	975	1,240	702	1,770	975	1,320	1,650	395	250	161	169
22	260	895	1,060	525	2,540	855	1,140	1,320	395	240	185	161
23	240	815	975	460	3,970	740	975	1,060	365	230	181	169
24	230	740	1,060	420	4,680	702	935	935	335	318	169	141
25	221	740	1,020	400	2,680	702	855	935	335	275	190	145
26	212	778	935	400	1,900	665	778	1,020	324	230	181	145
27	208	1,530	855	360	1,650	855	702	855	313	240	190	138
28	230	4,500	778	360	1,420	1,650	665	740	365	240	208	135
29	221	12,100	665	400	-------	1,420	595	665	395	235	190	138
30	221	5,400	595	400	-------	1,240	595	595	428	212	181	141
31	230	-------	630	420	-------	1,650	-------	560	-------	194	185	-------

Note.—Discharge Jan. 11-19 and Jan. 24 to Feb. 2 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Clearfield Creek at Dimeling and Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of Bald Eagle Creek at Beech Creek Station, for the year ending Sept. 30, 1922

(Drainage area 565 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	428	208	271	0.480	0.55
November	12,100	365	1,390	2.46	2.74
December	2,970	595	1,250	2.21	2.55
January	935	360	530	.938	1.08
February	4,680	460	1,230	2.18	2.27
March	3,970	665	1,550	2.74	3.16
April	5,590	595	1,490	2.64	2.94
May	2,540	525	953	1.69	1.95
June	935	313	508	.899	1.00
July	975	194	361	.639	.74
August	324	161	211	.373	.43
September	460	135	178	.315	.35
The Year	12,100	135	823	1.46	19.76

SUSQUEHANNA BASIN—STATION NO. 22

PINE CREEK AT CEDAR RUN

Location.—At single-span steel highway bridge, Cedar Run, Lycoming County.

Drainage Area.—590 square miles.

Records Available.—July 19, 1918, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by C. R. Nivison. Elevation of gage zero 781.96 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high; left is low but not subject to overflow. Bed is composed of gravel. Control is at a riffle, where the bed is composed of gravel, about 500 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 5.52 feet observed at 8 a. m. November 29 (discharge, about 6,360 second-feet); minimum, 1.18 feet at 6 p. m. September 27 and from 6 p. m. September 28 to 8 a. m. September 30 (discharge, 49 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 50 and 2,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

Discharge measurements of Pine Creek at Cedar Run during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
15	June 8	H. J. McIntyre	2.60	1,100
16	Sept. 1	J. M. Snavely	1.58	170
17	28a	do	1.18	49.9

a Measurement made by wading 500 feet below gage.

Daily Mean Gage Height, in feet, of Pine Creek at Cedar Run, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.88	1.86	3.88	2.82	2.52	2.44	3.64	2.09	1.79	2.27	1.42	1.56
2	1.72	3.55	3.54	2.72	2.87	2.44	3.28	2.01	2.24	2.41	1.50	1.39
3	1.72	3.08	3.66	2.72	3.46	2.42	3.11	1.96	3.94	2.72	1.52	1.44
4	1.73	2.84	3.42	3.01	3.25	2.36	3.58	2.14	3.98	3.13	1.49	1.64
5	1.70	2.60	3.24	3.40	3.80	2.22	3.59	2.44	3.40	2.76	1.51	1.48
6	1.65	2.42	3.06	2.68	3.81	2.55	3.48	2.70	3.19	2.54	1.46	1.38
7	1.60	2.33	2.83	2.18	3.79	4.02	3.42	2.64	3.40	2.40	1.41	1.37
8	1.62	2.20	2.66	2.09	3.67	4.52	3.27	2.54	2.60	2.18	1.64	1.30
9	1.64	2.15	2.52	2.18	3.54	3.66	3.14	2.46	2.42	2.08	1.63	1.28
10	1.62	2.38	2.41	2.21	3.03	3.35	3.23	2.38	2.45	1.84	1.48	1.27
11	1.58	2.35	2.38	2.13	2.76	3.58	3.17	2.32	4.12	1.59	1.41	1.28
12	1.60	2.44	2.28	2.24	2.72	3.54	3.34	2.27	3.60	1.65	1.39	2.06
13	1.64	2.36	2.25	2.40	2.79	3.61	3.24	2.18	3.12	1.76	1.37	1.66
14	1.61	2.28	2.14	2.42	2.56	3.72	3.11	2.13	2.85	1.70	1.36	1.48
15	1.59	2.36	2.08	2.36	2.53	3.54	4.22	2.12	2.61	1.67	1.30	1.40
16	1.56	2.30	2.79	2.19	2.50	3.50	4.06	2.02	2.44	1.66	1.29	1.39
17	1.56	2.39	3.22	2.01	2.45	3.14	4.05	1.96	2.36	1.62	1.29	1.34
18	1.56	3.22	2.88	2.12	2.46	2.96	4.00	2.20	2.29	1.60	1.30	1.30
19	1.70	3.48	2.57	2.48	2.53	2.78	4.24	2.77	2.16	1.66	1.67	1.28
20	1.84	3.46	2.54	2.58	2.89	2.70	3.96	2.84	2.07	1.54	1.55	1.26
21	1.78	3.16	2.50	2.6	3.66	2.62	3.45	2.76	1.99	1.46	1.40	1.26
22	1.75	2.98	2.40	2.46	3.52	2.45	3.20	2.68	2.02	1.48	1.33	1.25
23	1.70	2.79	2.49	2.31	3.78	2.30	2.96	2.58	1.96	1.46	1.30	1.24
24	1.66	2.72	2.51	2.34	4.49	2.30	2.78	2.44	1.80	1.48	1.26	1.23
25	1.70	2.78	2.32	2.40	3.67	2.28	2.64	2.38	1.78	1.46	1.31	1.22
26	1.66	2.68	2.76	2.48	3.16	2.40	2.51	2.36	1.71	1.46	1.39	1.19
27	1.62	3.08	3.10	2.48	2.96	2.78	2.46	2.20	1.68	1.44	1.44	1.18
28	1.61	5.29	2.70	2.52	2.74	4.13	2.36	2.08	1.83	1.44	1.38	1.18
29	1.60	5.40	2.87	2.54	-------	4.36	2.20	1.96	2.65	1.42	1.34	1.18
30	1.58	4.28	2.60	2.54	-------	3.94	2.16	1.92	2.39	1.40	1.32	1.18
31	1.58	-------	2.69	2.52	-------	3.70	-------	1.84	-------	1.38	1.33	-------

Note.—Stage-discharge relation Dec. 26 to Feb. 22 affected by ice.

Daily discharge, in second-feet, of Pine Creek at Cedar Run, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	293	282	2,730	320	300	780	2,220	460	244	585	117	161
2	215	2,220	2,070	340	550	780	1,800	380	585	730	142	108
3	215	1,540	2,380	460	1,200	730	1,540	350	2,730	1,050	148	123
4	219	1,230	1,930	900	700	680	2,220	500	2,920	1,540	139	187
5	207	940	1,670	1,200	650	540	2,220	780	1,930	1,110	145	136
6	190	730	1,540	700	700	885	2,070	1,050	1,670	885	130	105
7	174	680	1,230	380	650	2,920	1,930	995	1,930	730	114	102
8	181	540	995	340	500	3,920	1,800	885	940	540	187	82
9	187	500	830	300	420	2,380	1,540	780	730	460	184	76
10	181	730	730	300	420	1,930	1,670	730	780	270	136	73
11	168	680	730	300	500	2,220	1,670	630	3,120	171	114	76
12	174	780	630	300	600	2,070	1,800	585	2,220	190	108	420
13	187	680	585	340	460	2,220	1,670	540	1,540	232	102	194
14	177	630	500	280	380	2,380	1,540	500	1,230	207	99	136
15	171	680	460	240	280	2,070	3,320	460	940	197	82	111
16	161	630	1,170	240	220	2,070	3,120	380	780	194	79	108
17	161	630	1,670	280	220	1,540	2,920	350	680	181	79	94
18	161	1,800	1,290	300	220	1,350	4,820	540	630	174	82	82
19	207	2,070	885	300	280	1,170	3,320	1,110	500	194	197	76
20	270	2,070	885	300	460	1,050	2,920	1,230	420	155	158	70
21	240	1,670	830	300	900	940	1,930	1,110	372	130	111	70
22	228	1,410	730	320	1,400	780	1,670	1,050	380	136	91	68
23	207	1,170	730	320	2,550	630	1,350	940	350	130	82	65
24	194	1,050	830	340	3,920	630	1,170	780	248	136	70	62
25	207	1,170	630	320	2,380	630	995	730	240	130	85	59
26	194	1,050	550	300	1,670	730	830	680	211	130	108	51
27	181	1,540	460	300	1,350	1,170	780	540	200	123	123	49
28	177	5,850	380	280	1,110	3,120	680	460	265	123	105	49
29	174	6,100	340	260	-------	3,720	540	350	995	117	94	49
30	168	3,520	340	240	-------	2,730	500	319	730	111	88	49
31	168	-------	320	240	-------	2,380	-------	270	-------	105	91	-------

Note.—Discharge Dec. 26 to Feb. 22 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Lycoming Creek near Trout Run and Bald Eagle Creek at Beech Creek Station.

Monthly discharge of Pine Creek at Cedar Run, for the year ending Sept. 30, 1922

(Drainage area 590 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	293	161	195	0.331	0.38
November	6,100	282	1,490	2.53	2.82
December	2,730	320	1,000	1.69	1.95
January	1,200	240	366	.620	.71
February	3,920	220	892	1.51	1.57
March	3,920	540	1,650	2.80	3.23
April	4,820	500	1,890	3.20	3.57
May	1,230	270	660	1.12	1.29
June	3,120	200	1,020	1.73	1.93
July	1,540	105	360	.610	.70
August	197	70	116	.197	.23
September	420	49	103	.175	.20
The Year	6,100	49	807	1.37	18.58

SUSQUEHANNA BASIN—STATION NO. 23

WEST BRANCH SUSQUEHANNA RIVER AT JERSEY SHORE

Location.—At two-span steel highway bridge, Jersey Shore, Lycoming County.

Drainage Area.—5,240 square miles.

Records Available.—October 18, 1913, to September 30, 1922.

Gages.—Staff painted on right abutment and standard chain attached to upstream side of bridge; read by C. B. McCullough to hundredths twice daily; during high stages more frequently. Zero elevation of both gages 517.33 feet, United States Geological Survey datum.

Channel and Control.—Righ bank is low and subject to overflow; left is high and not subject to overflow. Bed is composed of gravel and rock.

Extremes of Stage.—Maximum gage height during the year, 16.75 feet observed at 5 p. m. November 29; minimum 1.20 feet September 27 to 30.

Ice.—Stage-discharge relation seriously affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Jersey Shore, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.67	2.10	10.90	8.20	4.90	4.80	7.68	3.18	3.02	2.85	1.65	1.52
2	2.64	4.38	8.60	8.04	4.90	4.45	7.65	2.98	3.10	3.40	1.82	1.56
3	2.50	7.70	8.22	7.28	6.06	4.05	7.02	2.88	4.70	3.73	1.95	1.54
4	2.48	6.16	7.42	7.20	7.22	3.95	6.60	2.95	6.27	4.80	2.04	1.58
5	2.44	5.22	6.78	7.90	6.75	3.95	6.55	3.50	5.52	4.65	2.00	1.70
6	2.38	4.45	6.10	9.20	6.08	4.25	6.25	5.20	4.90	3.90	2.00	1.64
7	2.31	3.98	5.46	9.05	5.95	5.40	5.85	4.70	4.45	3.40	1.88	1.60
8	2.25	3.62	4.96	-------	5.64	10.17	5.52	4.30	3.98	3.10	1.84	1.56
9	2.16	3.34	4.55	-------	5.25	8.98	5.20	3.98	3.65	2.85	1.84	1.49
10	2.15	3.22	4.26	-------	4.98	7.30	5.14	3.74	3.48	2.68	1.98	1.40
11	2.10	3.49	4.04	-------	4.82	6.93	4.96	3.55	4.18	2.52	1.88	1.40
12	2.16	3.56	3.80	6.20	5.12	8.15	5.15	3.42	5.38	2.40	1.78	1.95
13	2.00	3.68	3.82	5.85	5.38	7.80	5.12	3.24	5.10	2.25	1.72	2.08
14	2.01	3.52	3.75	5.72	5.15	7.50	4.90	3.16	4.35	1.92	1.69	1.93
15	2.04	3.45	3.55	5.58	4.85	7.50	6.90	3.08	3.88	2.00	1.64	1.75
16	2.02	3.60	3.30	5.75	4.88	7.22	11.17	3.55	3.48	1.90	1.59	1.60
17	1.99	3.88	3.19	5.68	4.58	6.48	9.30	3.39	3.25	1.98	1.55	1.55
18	1.92	5.35	3.95	5.49	4.22	5.82	-------	3.45	3.54	2.01	1.54	1.50
19	1.98	7.82	5.30	5.40	4.08	5.22	-------	4.16	3.70	2.02	1.52	1.46
20	2.14	7.25	5.18	5.54	4.35	4.88	-------	5.42	3.34	2.12	1.50	1.41
21	2.25	6.42	4.88	6.42	6.33	4.62	-------	5.80	3.08	2.08	1.61	1.36
22	2.36	5.70	4.50	6.74	8.77	4.28	-------	5.39	2.92	1.98	1.59	1.32
23	2.30	5.12	4.35	6.49	8.52	3.98	-------	4.92	2.80	1.90	1.50	1.30
24	2.29	4.70	4.20	-------	10.80	3.70	-------	4.48	2.65	1.85	1.50	1.28
25	2.20	4.95	4.60	-------	8.76	3.58	-------	4.22	2.50	1.85	1.60	1.26
26	2.16	5.12	5.40	-------	6.78	3.60	-------	4.52	2.48	1.78	1.60	1.24
27	2.08	5.79	5.05	-------	5.95	3.82	3.98	4.50	2.32	1.80	1.60	1.20
28	2.02	10.25	5.40	-------	5.40	5.48	3.68	4.02	2.35	1.84	1.62	1.20
29	1.99	16.12	5.35	-------	-------	8.30	3.48	3.68	2.69	1.80	1.66	1.20
30	1.98	14.67	5.45	-------	-------	8.08	3.30	3.35	3.02	1.72	1.61	1.20
31	1.95	-------	7.88	-------	-------	7.35	-------	3.18	-------	1.66	1.59	-------

Note.—Stage-discharge relation Dec. 30 to Feb. 22 affected by ice. Gage height not observed on days of no record.

SUSQUEHANNA BASIN—STATION NO. 24

LYCOMING CREEK NEAR TROUT RUN

Location.—At single-span steel highway bridge, about two and one-half miles above Trout Run, Lycoming County.

Drainage Area.—185 square miles.

Records Available.—December 4, 1913, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Miss Orpha and Mr. E. L. Apker. Elevation of gage zero 693.4 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—The right bank overflows during extremely high stages; the left is high and does not overflow. The bed is composed of gravel and large stones. Control is at a riffle about 100 feet below gage, where the bed is composed of gravel; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 11.24 feet observed at 5.40 p. m. June 3 (discharge, about 7,000 second-feet); minimum, 1.86 feet at 6.10 p. m. September 30 (discharge, 31 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined from 30 to 3,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Lycoming Creek near Trout Run, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
51	June 7	H. J. McIntyre	5.06	1,300
52	Aug. 31	J. M. Snavely	1.98	44.0
53	31	do	1.98	44.2

Daily Mean Gage Height, in feet, of Lycoming Creek near Trout Run, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.08	-------	4.62	-------	-------	2.98	4.76	2.55	2.36	3.10	2.08	2.32
2	2.00	3.88	4.95	2.50	-------	3.01	4.28	2.53	4.89	4.85	2.60	2.12
3	2.12	3.85	4.28	2.84	-------	2.85	4.40	2.50	9.61	5.24	2.57	2.12
4	2.30	3.42	4.20	3.50	-------	2.79	4.40	2.72	7.07	4.94	2.42	2.28
5	2.14	3.10	3.90	3.82	-------	2.92	4.35	4.06	5.32	4.28	2.32	2.18
6	2.02	2.89	3.68	2.75	-------	3.00	4.28	4.53	4.86	3.68	2.22	2.08
7	2.00	2.68	3.35	2.48	-------	5.97	4.20	4.12	4.88	3.42	2.19	2.00
8	2.26	2.56	3.22	2.35	-------	5.98	4.02	3.74	4.19	3.14	2.40	2.00
9	2.22	2.51	3.16	2.40	2.40	4.64	3.94	3.49	3.75	2.97	2.30	1.98
10	2.12	2.90	3.08	-------	2.31	4.28	3.73	3.29	3.50	2.82	2.18	1.96
11	2.18	2.78	3.00	-------	2.36	4.48	3.64	3.12	4.94	2.70	2.12	2.04
12	2.28	2.72	2.92	-------	2.48	4.22	3.86	3.00	4.40	2.64	2.09	3.56
13	2.28	2.68	2.86	-------	2.42	4.36	3.64	2.88	3.79	2.56	2.06	2.54
14	2.19	2.61	2.75	-------	2.30	4.45	3.55	2.82	3.48	2.46	2.04	2.29
15	2.12	2.66	2.64	-------	2.32	4.56	5.02	2.86	3.18	2.42	2.02	2.19
16	2.06	2.69	2.60	-------	2.28	4.40	4.36	2.73	3.01	2.35	2.00	2.14
17	2.04	2.90	2.70	-------	-------	4.22	4.62	2.64	3.15	2.30	1.98	2.09
18	1.98	4.02	5.38	-------	-------	3.96	4.75	3.29	3.18	2.38	2.02	2.04
19	2.08	3.88	4.14	-------	2.29	3.78	4.12	4.60	2.92	2.50	2.34	2.00
20	2.46	3.80	3.80	-------	2.44	3.71	3.98	4.26	2.77	2.35	2.10	2.00
21	2.58	3.45	3.29	-------	2.92	3.72	3.60	3.89	2.79	2.24	2.02	-------
22	2.48	3.28	2.88	-------	3.38	3.38	3.43	3.56	2.95	2.18	1.96	-------
23	2.44	3.12	3.00	-------	4.78	3.25	3.32	3.29	2.78	2.16	1.95	-------
24	2.38	2.82	3.10	2.44	4.95	3.24	3.14	3.10	2.60	2.20	1.95	-------
25	-------	3.02	3.00	2.44	4.02	3.48	3.06	3.04	2.52	2.22	1.90	1.92
26	-------	3.70	2.70	2.45	3.64	3.78	2.96	3.02	2.44	2.15	1.98	1.89
27	-------	4.48	-------	-------	3.56	3.81	2.82	2.82	2.41	2.15	2.00	1.88
28	-------	6.37	-------	-------	3.40	5.06	2.72	2.70	2.38	2.15	2.02	1.86
29	-------	6.08	-------	-------	-------	5.35	2.68	2.62	2.98	2.10	1.99	1.88
30	2.11	5.32	-------	-------	-------	4.82	2.62	2.52	2.78	2.05	1.95	1.87
31	2.10	-------	-------	-------	-------	4.52	-------	2.45	-------	2.02	1.96	-------

Note.—Gage height Oct. 25-29, Nov. 1 and Sept. 21-24 not observed. Gage height Dec. 27 to Jan. 1, Jan. 10-23, Jan. 27 to Feb. 8 and Feb. 17 and 18 affected by ice and unsatisfactory.

Daily discharge, in second-feet, of Lycoming Creek near Trout Run, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	120	835	110	100	245	930	131	94	275	52	87
2	43	545	1,030	120	140	245	705	131	980	930	142	57
3	57	505	705	204	320	204	745	120	4,920	1,130	131	57
4	84	365	665	400	300	190	745	165	2,410	930	105	81
5	60	275	545	505	190	217	745	625	1,180	705	87	65
6	45	217	470	178	140	245	705	790	980	470	71	52
7	43	165	350	116	130	1,600	665	625	980	385	67	43
8	78	131	305	92	110	1,600	585	470	665	290	101	43
9	71	120	290	101	101	835	545	400	505	231	84	41
10	57	217	275	90	86	705	470	335	400	190	65	39
11	65	190	245	85	94	790	435	275	980	165	57	47
12	81	165	217	85	116	665	545	245	745	154	53	435
13	81	165	204	80	105	745	435	217	505	131	50	131
14	67	142	178	75	84	745	435	190	400	112	47	82
15	57	154	154	75	87	835	1,030	204	305	105	45	67
16	50	165	142	75	81	745	745	178	245	92	43	60
17	47	217	165	80	75	665	835	154	290	84	41	53
18	41	585	1,240	85	75	585	930	335	305	98	45	47
19	52	545	625	95	82	505	625	835	217	142	91	43
20	112	505	505	100	109	470	585	705	178	92	54	43
21	142	382	335	110	217	470	470	545	190	74	45	42
22	116	335	217	110	365	365	382	435	231	65	39	40
23	109	275	245	110	930	320	335	335	190	62	38	38
24	98	190	275	109	1,030	320	290	275	142	68	38	38
25	85	245	245	109	585	400	260	260	120	71	34	36
26	75	470	165	110	435	505	231	245	109	61	41	33
27	65	790	130	100	435	505	190	190	103	61	43	33
28	60	1,880	120	90	365	1,080	165	165	98	61	45	33
29	55	1,670	110	85	-------	1,240	165	142	245	54	42	33
30	55	1,180	100	80	-------	930	142	120	190	48	38	32
31	54	-------	100	80	-------	790	-------	110	-------	45	39	-------

Note.—Discharge Oct. 25-29, Nov. 1 and Sept. 21-24 estimated, because of no gage height record, from study of gage height graph and discharge of Towanda Creek near Monroeton. Discharge Dec. 27 to Jan. 1, Jan. 10-23, Jan. 27 to Feb. 8 and Feb. 17 and 18 estimated, because of ice and unsatisfactory gage height record, from weather records, study of gage height graph and comparison with similar studies for Towanda Creek near Monroeton and Pine Creek at Cedar Run.

Monthly discharge of Lycoming Creek near Trout Run, for the year ending Sept. 30, 1922

(Drainage area 185 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	142	41	69.6	0.376	0.43
November	1,880	120	430	2.32	2.59
December	1,240	100	361	1.95	2.25
January	505	75	124	.670	.77
February	1,030	75	246	1.33	1.38
March	1,600	190	637	3.44	3.97
April	1,030	142	536	2.90	3.24
May	835	110	321	1.74	2.01
June	4,920	94	630	3.41	3.80
July	1,130	45	239	1.29	1.49
August	142	34	60.4	.326	.38
September	435	32	64.4	.348	.39
The Year	4,920	32	309	1.67	22.70

SUSQUEHANNA BASIN—STATION NO. 25

WEST BRANCH SUSQUEHANNA RIVER AT WILLIAMSPORT

Location.—At five-span steel highway bridge, Market Street, Williamsport, Lycoming County.

Drainage Area.—5,670 square miles.

Records Available.—March 1, 1895, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by J. V. April. Elevation of gage zero 494.55 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and rocky. Bed is composed of silt and gravel; shifts slightly. Control probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 15.8 feet at 9 p. m. November 29 (discharge, 86,400 second-feet); minimum, 0.04 foot from 5 p. m. September 28 to 5 p. m. September 30 (discharge, 624 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 2,000 second-feet and well defined between 2,000 and 120,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages when they are fair.

Discharge measurements of West Branch Susquehanna River at Williamsport, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
47	June 7	J. M. Snavely	4.94	11,300
48	Sept. 1	do	.24	506
49	27a	H. J. McIntyre	.05	639

a Measurement made by wading 1500 feet above gage.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Williamsport, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.92	1.09	10.53	2.54	2.12	4.76	7.53	2.64	2.38	2.51	0.55	0.26
2	1.83	3.28	8.84	3.42	2.13	4.28	7.62	2.44	2.78	3.30	.79	.29
3	1.75	7.03	8.63	2.47	3.03	3.85	7.15	2.32	6.74	3.89	.84	.38
4	1.66	6.14	7.82	1.87	4.12	3.66	6.76	2.31	7.99	4.91	.92	.35
5	1.66	4.90	6.86	2.37	4.42	3.65	6.71	3.45	6.20	4.68	.84	.47
6	1.53	4.28	6.18	4.01	3.70	4.04	6.36	5.33	5.47	3.73	.84	.44
7	1.45	3.65	5.65	4.32	3.54	5.15	5.90	5.04	5.02	3.05	.72	.34
8	1.38	3.25	5.09	3.48	3.37	10.20	5.56	4.38	4.15	2.55	.71	.34
9	1.33	2.94	4.47	2.87	2.84	9.40	5.22	3.99	3.61	1.97	.70	.30
10	1.31	2.74	4.06	2.93	2.40	7.64	5.08	3.62	3.24	1.93	.78	.22
11	1.23	2.91	3.78	3.37	2.28	7.07	4.87	3.34	4.14	1.67	.72	.17
12	1.31	3.13	3.61	2.76	2.68	8.12	5.05	3.11	5.21	1.52	.70	.94
13	1.23	3.22	3.50	2.53	2.83	8.04	5.06	2.90	5.10	1.34	.49	1.25
14	1.25	3.13	3.38	2.05	3.08	7.49	4.84	2.74	4.21	1.15	.50	.76
15	1.18	2.99	3.23	1.94	2.67	7.56	6.58	2.81	3.63	1.10	.43	.65
16	1.11	3.13	2.86	2.35	2.67	7.35	10.76	3.13	3.11	.99	.38	.44
17	1.07	3.36	2.66	2.37	2.69	6.61	9.46	2.94	2.82	.98	.34	.38
18	1.02	4.66	3.38	1.96	2.38	5.83	8.97	3.03	2.88	.99	.30	.30
19	1.05	7.47	5.00	1.86	1.85	5.27	8.75	4.26	3.28	1.05	.26	.30
20	1.22	7.32	5.07	2.22	2.03	4.81	7.62	5.64	2.83	1.05	.42	.24
21	1.50	6.45	4.74	2.70	3.69	4.47	6.73	5.84	2.49	1.00	.41	.16
22	1.58	5.65	4.28	3.33	6.18	4.15	5.91	5.47	2.35	1.07	.40	.12
23	1.53	5.08	3.68	3.81	7.59	3.78	5.23	4.93	2.66	.87	.37	.12
24	1.50	4.74	3.79	3.09	10.76	3.44	4.74	4.36	1.93	.80	.34	.12
25	1.37	4.39	4.03	2.81	9.09	3.27	4.26	4.02	1.73	.76	.30	.06
26	1.30	4.74	4.60	2.25	7.15	3.33	3.90	4.19	1.41	.72	.30	.06
27	1.24	5.35	4.16	2.13	6.07	3.54	3.60	4.31	1.42	.72	.46	.06
28	1.14	9.62	3.69	2.13	5.42	5.57	3.31	3.82	-------	.72	.40	.05
29	1.05	15.29	3.61	2.07	-------	8.16	3.02	3.29	-------	.73	.36	.04
30	1.01	14.28	3.31	2.26	-------	8.17	2.81	2.95	2.42	.63	.40	.04
31	1.00	-------	2.70	2.26	-------	7.38	-------	2.65	-------	.54	.50	-------

Note.—Stage-discharge relation Jan. 1-3 affected by ice. Gage height June 28 and 29 not observed.

Daily discharge, in second-feet, of West Branch Susquehanna River at Williamsport, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,800	2,220	42,200	5,000	4,260	12,800	25,400	5,470	4,980	5,220	1,300	888
2	3,580	7,440	32,300	4,400	4,260	10,800	25,900	4,980	6,000	7,440	1,690	927
3	3,580	22,900	31,200	4,000	6,560	9,020	23,900	4,730	21,400	9,350	1,780	1,050
4	3,370	18,500	27,000	3,800	10,000	8,700	21,900	4,730	28,000	13,200	1,860	1,010
5	3,370	13,200	22,400	4,980	11,200	8,380	21,400	7,750	19,000	12,300	1,780	1,180
6	2,900	10,800	19,000	9,600	8,700	9,690	19,900	14,900	15,800	8,700	1,780	1,140
7	2,770	8,380	16,200	10,800	8,060	14,500	17,600	13,600	13,600	6,560	1,530	996
8	2,770	7,140	14,000	8,060	7,750	40,400	16,200	11,200	10,400	5,470	1,530	976
9	2,580	6,280	11,500	6,280	6,000	35,700	14,500	9,690	8,380	4,020	1,530	940
10	2,580	5,730	10,000	6,280	4,980	25,900	14,000	8,380	7,140	3,800	1,690	836
11	2,400	6,280	9,020	7,750	4,730	23,400	13,200	7,440	10,000	3,370	1,530	774
12	2,580	6,850	8,380	6,000	5,730	28,500	13,600	6,850	14,500	2,960	1,530	1,950
13	2,400	7,140	8,060	5,220	6,000	28,000	14,000	6,280	14,000	2,580	1,220	2,400
14	2,400	6,850	7,750	4,020	6,850	25,400	12,800	5,730	10,400	2,400	1,230	1,610
15	2,400	6,560	7,140	3,800	5,730	25,900	20,900	6,000	8,280	2,220	1,120	1,460
16	2,220	6,850	6,280	4,980	5,730	24,900	44,100	6,850	6,850	2,040	1,050	1,140
17	2,220	7,750	5,730	4,980	5,730	20,900	36,300	6,280	6,000	2,040	996	1,050
18	2,040	12,300	7,750	4,020	4,980	17,200	33,500	6,560	6,280	2,040	940	940
19	2,040	25,400	13,600	3,800	3,580	14,900	32,300	10,800	7,440	2,040	888	940
20	2,400	24,400	14,000	4,490	4,020	12,800	25,900	16,200	6,000	2,040	1,110	832
21	2,960	19,900	12,300	5,730	8,700	11,500	21,400	17,200	5,220	2,040	1,100	762
22	3,160	16,200	10,800	7,440	19,000	10,400	17,600	15,800	4,980	2,220	1,080	714
23	2,960	14,000	8,700	9,020	25,900	9,020	14,500	13,200	4,260	1,780	1,040	714
24	2,960	12,300	9,020	6,850	44,100	7,750	12,300	11,200	3,800	1,690	996	714
25	2,770	11,200	9,690	6,000	34,000	7,440	10,800	9,690	3,370	1,610	940	646
26	2,580	12,300	11,900	4,490	23,900	7,440	9,350	10,400	2,770	1,530	940	646
27	2,400	15,400	10,400	4,260	18,500	8,060	8,380	10,800	2,770	1,530	1,170	646
28	2,220	36,800	8,700	4,260	15,400	16,200	7,440	9,020	2,800	1,530	1,080	635
29	2,040	81,400	8,380	4,260	-------	29,100	6,560	7,440	4,000	1,610	1,020	624
30	2,040	71,800	7,440	4,730	-------	29,100	6,000	6,560	4,980	1,460	1,080	624
31	2,040	-------	5,730	4,730	-------	24,900	-------	5,470	-------	1,300	1,230	-------

Note.—Discharge Jan. 1-3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for West Branch Susquehanna River at Renovo and Susquehanna River at Harrisburg. Discharge June 28 and 29 estimated, because of no gage height record, from study of gage height graph in comparison with similar graphs for West Branch Susquehanna River at Jersey Shore and Lewisburg.

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Monthly discharge of West Branch Susquehanna River at Williamsport, for the year ending Sept. 30, 1922

(Drainage area 5,670 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,800	2,040	2,660	0.469	0.54
November	81,400	2,220	16,800	2.96	3.30
December	42,200	5,730	13,400	2.36	2.72
January	10,800	3,800	5,620	.991	1.14
February	44,100	3,580	11,200	1.98	2.06
March	40,400	7,440	18,000	3.17	3.66
April	44,100	6,000	18,700	3.30	3.68
May	17,200	4,730	9,070	1.60	1.84
June	28,000	2,770	8,780	1.55	1.73
July	13,200	1,300	3,810	.672	.77
August	1,860	888	1,280	.226	.26
September	2,400	624	994	.175	.20
The Year	81,400	624	9,160	1.62	21.90

SUSQUEHANNA BASIN—STATION NO. 26

WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG

Location.—At six-span steel highway bridge, Market Street, Lewisburg, Union County.

Drainage Area.—6,830 square miles.

Records Available.—September 21, 1913, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by T. E. Irland; during high stages more frequently. Elevation of gage zero 427.9 feet, United States Geological Survey datum.

Channel and Control.—Right bank is high and not subject to overflow; left is of medium height and is overflowed during extremely high stages. Bed is composed of gravel.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 14.2 feet at midnight November 29-30; minimum,—0.60 foot at 5 p. m. September 30.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Daily Mean Gage Height, in feet, of West Branch Susquehanna River at Lewisburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.95	0.33	10.03	1.45	3.32	3.54	6.00	1.58	1.39	1.53	0.08	-------
2	.85	.38	7.78	1.50	3.36	3.12	6.29	1.42	1.63	2.97	.16	-------
3	.82	4.30	7.81	1.27	3.72	2.74	5.88	1.35	6.45	3.27	.32	—.29
4	.93	5.02	6.78	1.11	4.30	2.50	5.38	1.34	8.05	3.46	.31	—.24
5	.86	4.31	6.02	1.19	5.78	2.65	5.48	2.30	6.08	3.64	.31	—.21
6	.79	3.53	5.07	2.07	6.52	2.97	5.14	3.63	5.45	2.90	.27	—.14
7	.68	2.84	4.36	2.91	5.48	4.11	4.72	4.14	4.91	2.19	.19	—.15
8	.61	2.35	3.75	2.54	5.50	9.68	4.34	3.38	3.95	1.71	.12	—.24
9	.64	1.97	3.24	1.77	4.73	8.86	3.97	2.89	2.97	1.38	.09	—.25
10	.63	1.71	2.90	1.52	4.48	6.97	3.82	2.54	2.49	1.16	.09	—.31
11	.58	1.63	2.62	1.69	4.32	5.90	3.66	2.25	2.66	.97	.13	—.35
12	.69	1.77	2.42	1.55	4.22	6.81	3.92	2.01	3.93	.85	.09	—.02
13	.73	1.91	2.30	1.20	4.28	6.85	3.93	1.77	4.04	.69	.01	.73
14	.64	1.87	2.19	1.06	4.23	6.34	3.80	1.67	3.28	.59	—.04	.37
15	.61	1.78	2.08	1.00	4.12	6.23	5.38	1.67	2.68	.49	—.05	.19
16	.51	1.75	1.77	1.03	4.04	6.14	8.45	1.73	2.18	.42	—.06	.00
17	.45	1.92	1.65	1.12	4.12	5.54	8.39	1.78	1.84	.36	—.07	—.22
18	.42	2.53	2.24	1.23	3.77	4.71	7.39	1.88	1.96	.41	—.09	—.20
19	.41	4.93	3.86	.97	3.52	4.07	7.28	2.82	2.16	.47	—.19	—.24
20	.49	5.90	3.76	1.05	3.40	3.67	6.36	4.19	1.93	.52	—.24	—.25
21	.77	5.16	3.45	1.31	4.80	3.35	5.44	4.42	1.61	.43	—.23	—.29
22	.83	4.34	3.13	1.73	5.99	3.04	4.65	4.17	1.73	.36	—.14	—.33
23	.75	3.72	2.68	2.15	6.04	2.73	4.02	3.62	1.43	.30	—.18	—.35
24	.71	3.33	2.44	2.06	8.70	2.37	3.47	3.13	1.22	.27	—.22	—.40
25	.67	2.97	2.73	3.85	8.00	2.18	3.08	2.77	1.04	.19	—.25	—.45
26	.58	3.22	3.15	3.86	5.83	2.17	2.71	2.75	.90	.16	—.26	—.48
27	.49	3.61	3.00	3.33	4.93	2.37	2.44	2.88	.76	.17	—.11	—.47
28	.46	6.70	2.68	3.23	4.22	3.79	2.17	2.56	.72	.21	—.01	—.49
29	.40	13.03	2.30	3.16	-------	6.29	1.94	2.14	.74	.20	—.12	—.51
30	.37	13.30	2.01	3.34	-------	6.88	1.73	1.82	1.32	.13	—.14	—.57
31	.36	-------	1.75	3.32	-------	6.14	-------	1.57	-------	.05	—.17	-------

Note.—Stage-discharge relation Jan. 25 to Feb. 23 affected by ice. Gage height Sept. 1 and 2 not observed.

SUSQUEHANNA BASIN—STATION NO. 27

SUSQUEHANNA RIVER AT SUNBURY

Location.—At twenty eight-span steel bridge, Philadelphia & Reading Railway Company, Sunbury, Northumberland County.

Drainage Area.—18,200 square miles.

Records Available.—August 9, 1916, to September 30, 1922.

Gages.—Staff painted on left face of first pier, graduated to two-hundredths between zero and 3.3 feet and to half feet above 3.0 feet. Read to hundredths between zero and 3.3 feet and to inches above 3.3 feet twice daily by W. E. Bayler; during high stages more frequently. Bristol water stage recorder installed on top, upstream end, of first pier was damaged by ice in February and the record discontinued in April. Zero elevation of both gages 420.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of highway bridge about 3,700 feet below gage.

Channel and Control.—Both banks are high but subject to overflow during extreme floods. Bed is composed of gravel and rock. Control is the remaining portion of the old Shamokin Dam about 6,800 feet below gage; permanent.

Extremes of Stage.—Maximum gage height during the year, 13.17 feet observed at 7 a. m. November 30; minimum, 0.02 foot at 5 p. m. September 30.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

The following discharge measurement was made by H. L. Landis: No. 4, June 27: Gage height, 3.28 feet; discharge, 31,000 second-feet.

Daily Mean Gage Height, in feet, of Susquehanna River at Sunbury, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.74	0.58	10.09	2.00	2.38	4.17	6.00	2.25	1.45	4.50	0.43	1.40
2	.66	.87	7.78	1.55	2.47	3.62	6.29	2.05	1.38	5.00	.47	1.15
3	.67	2.42	6.92	1.15	3.25	3.10	6.21	1.85	3.88	5.62	.58	.90
4	.68	3.05	6.75	1.10	3.32	2.85	5.92	1.80	6.04	5.33	.65	.90
5	.68	3.00	6.04	1.29	3.50	2.75	5.50	2.25	6.42	5.17	.70	.78
6	.67	2.62	5.38	2.00	3.50	3.10	6.34	2.85	6.21	4.46	.70	.68
7	.62	2.15	4.66	2.98	3.67	3.68	6.04	3.58	5.33	3.67	.63	.60
8	.57	1.89	4.12	3.10	3.12	8.37	5.50	3.67	4.25	3.05	.57	1.00
9	.59	1.68	3.58	2.70	2.60	9.72	5.29	3.42	3.58	2.65	.53	.75
10	.65	1.58	3.20	2.45	2.50	8.04	5.25	3.10	3.08	2.45	.44	.62
11	.62	1.53	2.95	2.25	2.39	6.67	4.96	2.92	2.75	2.21	-------	.57
12	.62	1.62	2.75	1.90	2.55	6.58	5.12	2.84	2.61	1.75	-------	.68
13	.75	1.98	2.63	1.50	2.55	6.50	5.25	2.50	3.85	1.45	-------	.63
14	.77	2.10	2.57	1.25	2.35	6.25	5.25	2.15	5.20	1.25	-------	.60
15	.73	2.04	2.50	1.05	2.15	6.33	6.38	1.95	4.79	1.20	-------	.60
16	.68	1.96	2.35	1.00	2.00	6.50	7.33	1.90	4.00	1.13	.30	.70
17	.63	2.05	2.00	1.00	1.85	6.50	7.50	1.89	3.23	1.07	.27	.70
18	.59	2.55	2.15	1.33	1.80	5.62	6.79	1.89	2.93	1.06	.26	.69
19	.55	3.52	3.35	1.39	1.80	4.62	6.58	2.15	5.19	.98	.21	.62
20	.56	4.84	3.67	1.47	2.00	4.12	6.12	2.85	5.25	.91	.17	.51
21	.72	4.84	3.67	1.65	3.44	3.75	5.46	3.20	3.42	.87	.16	.40
22	.83	4.67	3.05	1.76	4.50	3.67	4.83	3.17	3.20	.74	.16	.35
23	.88	4.38	2.75	1.78	5.38	3.67	4.33	3.12	3.32	.65	.13	.30
24	1.05	3.88	2.55	1.73	8.03	3.67	4.00	3.04	4.42	.61	.23	.22
25	1.20	3.35	2.35	1.61	8.58	3.28	3.67	2.72	3.96	.60	.26	.17
26	1.11	3.26	2.15	1.50	7.29	3.13	3.36	2.50	3.67	.62	.39	.13
27	1.00	3.66	2.15	2.05	5.75	3.04	2.90	2.60	3.22	.61	2.14	.09
28	.88	5.45	2.50	2.20	4.88	3.65	2.65	2.30	2.70	.66	2.20	.06
29	.76	11.19	2.35	2.20	-------	5.84	2.56	2.05	2.50	.70	2.40	.04
30	.68	12.95	2.15	2.20	-------	6.92	2.44	1.85	4.04	.67	2.37	.02
31	.60	-------	2.00	2.30	-------	6.58	-------	1.65	-------	.54	1.70	-------

Note.—Stage-discharge relation Jan. 27 to Feb. 22 affected by ice. Gage height Aug. 11-15 unsatisfactory.

FRANKSTOWN BRANCH JUNIATA RIVER AT WILLIAMSBURG

Location.—At two-span steel highway bridge, Williamsburg, Blair County.

Drainage Area.—295 square miles.

Records Available.—October 24, 1916, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by R. E. Rhule. Elevation of gage zero 831.78 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high but subject to overflow at extremely high stages. Bed is composed of mud, gravel and small boulders. Control for low stages is a water main crossing the stream diagonally about 150 feet below gage; permanent. Medium and high stage control is at the first series of riffles about 450 feet below the water main; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 11.6 feet at 6 a. m. November 29 (discharge, about 9,000 second-feet); minimum, 1.45 feet on September 4 (discharge, 56 second-feet).

Ice.—Stage-discharge relation rarely affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve well defined between 70 and 2,009 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extremely high stages which are fair.

Discharge measurements of Frankstown Branch Juniata River at Williamsburg during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
16	Oct. 6	J. M. Snavely	1.81	110
17	Nov. 29a	do	9.92	5,730
18	June 1	do	2.04	151

a Measurement made by surface method.

Daily Mean Gage Height, in feet, of Frankstown Branch Juniata River at Williamsburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.89	2.42	5.28	2.78	2.32	3.46	6.40	2.47	2.07	1.76	1.58	1.50
2	1.82	3.37	4.96	2.19	3.25	3.42	5.26	2.43	2.07	1.98	1.60	1.50
3	2.10	2.56	5.08	2.46	4.20	3.18	4.78	2.40	2.32	2.12	1.55	1.49
4	2.20	2.32	4.59	2.82	3.40	3.30	4.13	2.55	2.05	1.87	1.55	1.45
5	1.98	2.15	4.36	3.30	3.12	3.35	3.75	2.70	2.00	1.76	1.55	1.47
6	1.91	2.09	3.99	2.94	3.06	3.76	3.50	3.38	2.00	1.70	1.52	1.50
7	1.86	2.02	3.67	2.58	3.22	5.22	3.41	2.94	1.92	1.69	1.50	1.50
8	1.82	1.97	3.50	2.55	2.74	5.39	3.20	2.54	1.87	1.69	1.60	1.50
9	1.85	1.95	3.34	2.55	2.60	4.28	3.22	2.45	1.89	1.67	1.58	1.50
10	1.82	2.06	3.18	2.55	2.64	4.22	3.10	2.46	1.90	1.65	1.53	1.50
11	1.80	1.96	3.15	2.32	2.86	4.45	2.90	2.46	1.96	1.65	1.50	1.62
12	1.74	2.11	3.22	2.22	3.24	4.28	2.88	2.40	2.64	1.58	1.50	2.24
13	1.75	2.06	3.22	2.55	3.08	3.59	2.75	2.35	2.02	1.55	1.50	1.63
14	1.72	2.00	3.10	2.55	2.94	4.00	3.72	2.28	1.95	1.55	1.50	1.54
15	1.75	2.26	2.96	2.56	2.98	4.65	7.23	2.32	1.91	1.55	1.50	1.52
16	1.75	2.14	2.85	2.49	2.86	4.20	4.96	2.26	1.85	1.55	1.50	1.50
17	1.70	3.35	2.83	2.26	2.16	3.88	4.70	2.20	1.86	1.55	1.50	1.50
18	1.72	3.94	4.17	2.50	2.76	3.54	4.26	2.43	1.87	1.76	1.50	1.50
19	1.76	3.32	4.26	2.61	2.82	3.42	3.82	3.72	1.81	1.74	1.50	1.50
20	1.76	3.06	3.84	3.92	4.97	3.36	3.94	2.97	1.74	1.60	1.50	1.50
21	1.74	2.74	3.65	3.66	4.98	3.27	3.48	2.90	1.83	1.59	1.50	1.50
22	1.73	2.58	3.24	3.62	5.12	3.01	3.41	2.77	1.80	1.58	1.50	1.50
23	1.69	2.46	3.20	3.00	5.88	2.88	3.21	2.63	1.76	1.59	1.50	1.50
24	1.68	2.44	4.05	2.68	5.35	2.84	3.04	2.53	1.70	1.99	1.50	1.50
25	1.64	2.86	4.00	2.32	4.42	3.00	2.96	2.51	1.67	1.66	1.50	1.50
26	1.66	3.12	3.60	2.45	4.01	2.88	2.92	2.48	1.63	1.59	1.55	1.50
27	1.66	4.92	3.50	2.45	4.22	2.95	2.75	2.42	1.60	1.58	1.52	1.50
28	1.66	8.91	3.28	2.55	4.02	3.96	2.67	2.31	1.74	1.58	1.50	1.50
29	1.65	10.13	3.18	2.61	-------	3.78	2.58	2.26	2.18	1.57	1.50	1.50
30	1.65	6.54	2.72	2.38	-------	4.17	2.54	2.15	1.85	1.54	1.50	1.50
31	1.65	-------	2.83	2.32	-------	4.71	-------	2.10	-------	1.51	1.50	-------

Daily discharge, in second-feet, of Frankstown Branch Juniata River at Williamsburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	128	237	1,460	337	215	564	2,270	248	160	105	74	63
2	115	527	1,280	193	457	527	1,400	248	160	146	77	63
3	177	272	1,340	248	855	457	1,160	237	215	171	70	62
4	193	215	1,050	337	527	492	811	272	160	124	70	56
5	146	182	960	492	425	527	682	310	150	105	70	59
6	132	171	767	380	425	682	564	527	150	94	66	63
7	123	150	640	284	457	1,400	527	380	134	92	63	63
8	115	144	564	272	324	1,520	457	272	124	92	77	63
9	121	140	492	272	284	950	457	248	128	88	74	63
10	115	160	457	272	297	855	425	248	130	85	67	63
11	112	142	457	215	351	950	365	248	142	85	63	80
12	102	171	457	193	457	900	365	237	297	74	63	204
13	103	160	457	272	640	767	324	226	150	70	63	82
14	98	160	425	272	380	767	640	215	140	70	63	69
15	103	204	380	272	395	1,050	2,960	215	132	70	63	66
16	103	182	351	260	351	855	1,280	204	121	70	63	63
17	94	527	351	204	182	724	1,100	193	123	70	63	63
18	98	724	855	260	324	564	900	248	124	105	63	63
19	105	492	900	284	337	527	682	640	114	102	63	63
20	105	425	682	724	1,280	527	724	380	102	77	63	63
21	102	324	602	640	1,280	492	564	365	117	76	63	63
22	100	284	457	602	1,340	395	527	324	112	74	63	63
23	92	248	457	395	1,880	365	457	297	105	76	63	63
24	90	248	767	310	1,520	351	395	272	94	148	63	63
25	83	351	811	215	950	395	380	260	88	86	63	63
26	86	425	602	248	767	365	365	260	82	76	70	63
27	86	1,220	564	248	855	380	324	237	77	74	66	63
28	86	4,840	492	272	767	767	297	215	102	74	63	63
29	85	6,480	457	284	-------	682	284	204	193	73	63	63
30	85	2,350	310	237	-------	855	272	182	121	69	63	63
31	85	-------	351	215	-------	1,100	-------	171	-------	64	63	-------

Monthly discharge of Frankstown Branch Juniata River at Williamsburg, for the year ending Sept. 30, 1922

(Drainage area 295 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	193	83	108	0.366	0.42
November	6,480	140	738	2.50	2.79
December	1,460	310	651	2.21	2.55
January	724	193	313	1.06	1.22
February	1,880	182	654	2.22	2.31
March	1,520	351	702	2.38	2.74
April	2,960	272	734	2.49	2.78
May	640	171	277	.939	1.08
June	297	77	135	.458	.51
July	171	64	89.8	.304	.35
August	77	63	65.8	.223	.26
September	204	63	68.8	.233	.26
The Year	6,480	63	375	1.27	17.27

SUSQUEHANNA BASIN—STATION NO. 29

LITTLE JUNIATA RIVER AT TYRONE

Location.—At single-span steel highway bridge, Pennsylvania Avenue, Tyrone, Blair County.

Drainage Area.—107 square miles.

Records Available.—August 22, 1918, to December 31, 1919, and April 1, 1920, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by Chas. G. Waple; during high stages more frequently. Elevation of gage zero 877.04 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high. Bed is composed of gravel and rock. Control is at a riffle about 700 feet below gage. Stage-discharge relation for medium and high stages is affected by backwater from Bald Eagle Creek, which confluences with the Little Juniata about 200 feet below gage.

Extremes of Stage.—Maximum gage height during the year, esti-

mated from hydrograph, 8.8 feet at 8 p. m. November 28; minimum, 0.89 foot at 5:30 p. m. September 23.

Ice.—Stage-discharge relation usually affected by ice.

Gage heights obtained at this station are for Flood Warning purposes.

Discharge measurements of Little Juniata River at Tyrone, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
4	Oct. 5	H. J. McIntyre	1.26	45.1
5	June 2	do	1.58	83.3

Daily Mean Gage Height, in feet, of Little Juniata River at Tyrone, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.21	2.56	3.65	1.95	1.76	2.49	4.28	1.84	1.57	1.50	1.18	0.96
2	1.18	3.08	3.75	1.79	3.28	2.52	3.56	1.81	1.64	2.64	1.13	.98
3	1.34	2.04	3.55	1.82	2.72	2.45	3.24	1.82	1.74	2.50	1.10	.98
4	1.35	1.89	3.40	2.00	2.21	2.39	3.16	1.82	1.60	2.06	1.06	.97
5	1.32	1.82	3.20	2.48	2.14	2.48	2.89	1.92	1.52	1.86	1.02	.96
6	1.24	1.80	2.95	2.11	2.19	2.61	2.68	3.00	1.50	1.72	1.06	.97
7	1.18	1.69	2.79	1.96	2.10	3.78	2.56	2.38	1.46	1.62	1.04	.97
8	1.25	1.54	2.58	1.79	1.86	3.60	2.44	2.08	1.45	1.52	1.16	.96
9	1.18	1.60	2.40	1.92	1.85	3.15	2.38	2.00	1.44	1.48	1.12	.94
10	1.14	1.61	2.30	1.90	1.82	3.10	2.34	2.00	1.50	1.44	1.08	.93
11	1.11	1.58	2.30	1.86	2.05	3.40	2.28	1.97	1.48	1.38	1.04	.92
12	1.16	1.71	2.40	1.95	2.15	3.32	2.25	1.92	1.45	1.33	1.04	1.30
13	1.12	1.54	2.30	1.89	2.13	3.22	2.16	1.82	1.32	1.35	1.02	.98
14	1.10	1.56	2.25	1.82	1.82	3.36	2.62	1.80	1.30	1.30	1.03	.96
15	1.08	1.85	2.08	1.78	1.92	3.36	5.50	1.84	1.30	1.36	1.02	.94
16	1.06	1.65	2.02	1.76	1.58	3.12	4.02	1.78	1.28	1.28	1.01	.93
17	1.05	2.72	2.00	1.54	1.18	2.90	3.87	1.78	1.41	1.26	1.00	.93
18	1.04	3.00	3.27	1.80	1.72	2.66	3.38	1.92	1.35	1.51	1.00	.92
19	1.24	2.70	2.75	1.92	1.82	2.56	3.14	1.98	1.28	1.46	1.00	.92
20	1.20	2.48	2.55	2.44	3.18	2.54	3.08	2.20	1.24	1.34	.99	.92
21	1.16	2.28	2.50	2.38	2.82	2.38	2.72	2.19	1.22	1.22	.98	.91
22	1.11	2.16	2.00	2.20	3.37	2.26	2.60	2.13	1.30	1.20	.98	.90
23	1.07	2.10	2.25	1.90	4.75	2.12	2.46	2.04	1.26	1.33	1.00	.90
24	1.08	2.15	2.70	1.69	3.91	2.23	2.34	1.94	1.17	1.62	1.02	.90
25	1.06	2.09	2.55	1.71	3.36	2.19	2.28	1.94	1.12	1.35	1.02	.92
26	1.04	2.93	2.32	1.71	3.02	2.14	2.20	1.86	1.09	1.21	1.02	.92
27	1.02	4.35	2.24	1.74	3.00	2.75	2.10	1.79	1.08	1.20	1.02	.93
28	1.02	6.35	2.18	1.84	2.77	3.45	2.01	1.76	1.71	1.19	1.00	.91
29	1.01	6.27	2.16	1.85	------	3.16	1.95	1.69	1.45	1.16	.98	.92
30	1.00	4.45	2.12	1.70	------	3.35	1.88	1.64	1.28	1.11	.98	.92
31	1.06	------	2.02	1.75	------	2.82	------	1.59	------	1.08	.97	------

SUSQUEHANNA BASIN—STATION NO. 30

FRANKSTOWN BRANCH JUNIATA RIVER AT HUNTINGDON

Location.—At three-span steel highway bridge known as Smithfield Bridge, Huntingdon, Huntingdon County.

Drainage Area.—845 square miles.

Records Available.—September 29, 1915, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read to half tenths thrice daily by Lawrence White. Elevation of gage zero 599.10 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high but subject to overflow at extremely high stages. Bed is composed of gravel and rocks. Control is a fish trap wall, about 800 feet below the gage, which was constructed during the fall of 1919.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 11.5 at 6 a. m. November 29; minimum, 0.65 foot several times in October and November and at 8 a. m. May 14 and September 30.

Ice.—Stage-discharge relation not seriously affected by ice.

Regulation.—There are large fluctuations in daily stage during low flows caused by the operation of a power plant about four miles above the gage.

Discharge measurements of Frankstown Branch Juniata River at Huntingdon, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
67	Oct. 6	H. J. McIntyre	2.21	828
68	June 1	do	2.16	874

Daily Mean Gage Height, in feet, of Frankstown Branch Juniata River at Huntingdon, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.13	1.13	5.08	1.83	1.86	3.28	5.38	2.00	1.53	1.72	1.43	-------
2	.78	3.63	4.53	1.75	2.40	3.00	4.73	1.95	1.72	3.27	1.77	-------
3	2.13	2.72	4.88	1.77	3.08	2.93	4.15	1.98	2.05	3.62	1.87	-------
4	1.62	2.32	4.10	1.30	3.02	2.92	3.72	2.05	.72	2.32	1.92	-------
5	1.42	2.10	4.02	2.48	2.63	2.88	3.50	1.98	1.88	-------	1.62	-------
6	1.63	1.27	3.87	2.15	2.43	3.37	3.30	3.50	1.97	1.97	.87	1.48
7	1.85	1.40	3.32	2.02	2.55	4.57	3.10	2.45	1.95	1.97	1.78	-------
8	1.43	1.62	3.22	1.20	2.12	5.20	2.78	2.50	1.70	1.73	1.45	-------
9	.83	1.83	2.97	1.90	2.12	4.20	2.17	2.40	1.70	-------	1.58	-------
10	1.97	1.82	2.95	1.98	1.95	3.95	2.73	1.95	1.90	1.95	1.92	-------
11	1.22	1.55	2.17	1.84	2.13	4.00	2.30	2.57	1.28	1.93	1.78	-------
12	1.35	1.83	2.68	1.70	2.75	4.22	2.75	1.98	1.95	1.93	1.20	-------
13	1.48	.90	2.97	2.12	2.42	3.85	2.18	2.27	2.05	2.08	.92	-------
14	1.62	1.53	2.35	1.77	2.68	3.78	3.00	1.68	2.03	1.85	1.40	-------
15	1.60	1.70	2.58	1.80	2.13	4.08	6.65	1.77	2.03	1.80	1.72	-------
16	.65	1.67	2.18	1.73	2.02	3.83	4.95	1.83	1.83	1.08	1.55	-------
17	1.12	2.08	2.57	1.73	1.93	3.53	4.42	1.82	1.68	1.83	-------	-------
18	1.35	3.10	3.07	1.53	1.77	3.25	4.30	1.97	.75	1.92	-------	-------
19	1.13	3.17	3.53	1.87	1.90	3.08	3.68	2.75	1.98	-------	-------	-------
20	1.15	2.20	3.22	2.10	2.34	3.02	3.72	2.28	1.35	1.38	-------	-------
21	1.17	2.50	3.08	2.68	4.45	2.97	3.28	2.08	1.70	1.83	-------	1.17
22	1.62	2.05	2.75	2.65	4.45	2.67	3.17	2.40	1.32	1.60	-------	1.18
23	.65	2.08	2.37	2.20	5.53	2.65	3.10	2.13	1.75	1.90	-------	1.20
24	1.38	1.98	2.26	1.70	5.48	2.68	2.35	2.07	1.55	2.33	-------	.83
25	1.12	1.82	3.70	1.83	4.43	2.28	2.63	2.07	.72	1.80	-------	.90
26	1.10	2.19	2.93	1.75	3.95	2.12	2.68	2.00	1.08	1.47	-------	1.13
27	1.12	4.57	2.75	1.83	3.82	2.56	2.15	2.02	1.52	1.92	-------	1.32
28	1.13	7.47	2.52	1.70	3.87	3.57	2.42	1.97	2.03	1.60	-------	-------
29	1.67	10.17	2.53	1.67	-------	3.42	2.57	2.02	2.30	1.62	-------	.98
30	.65	6.54	2.32	2.25	-------	3.17	1.93	1.67	1.92	.87	-------	-------
31	1.38	-------	2.33	1.47	-------	3.97	-------	1.75	-------	1.77	-------	-------

Note.—Gage height not observed, or usual number of observations not taken, on days of no record. Bridge repaired Aug. 17 to Sept. 20; gage not accessible except on Sept. 6.

SUSQUEHANNA BASIN—STATION NO. 31

RAYSTOWN BRANCH JUNIATA RIVER AT SAXTON

Location.—At two-span steel highway bridge, Saxton, Bedford County.

Drainage Area.—790 square miles.

Records Available.—August 31, 1911, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by D. R. Jenkins. Elevation of gage zero 789.91 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Banks are subject to overflow during high stages. Control was at a heavy boulder riffle about 350 feet below gage until about the first of February 1921, when a new one was formed by the reconstruction of the H. & B. T. M. R. R. bridge about 250 feet below the gage, which was partially washed away during the high flow of November 29, 1921.

Extremes of Discharge.—Maximum stage during the year, 9.20 feet observed at 12.30 p. m. November 29 (discharge, 12,700 second feet); minimum, 0.80 foot on September 25 (discharge, 80 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation changed on November 29, 1921, when a part of the new control was washed away; also affected by ice. Two rating curves used; the first applicable to November 28, 1921, well defined between 150 and 1,000 second-feet and fairly well defined from 1,000 to 12,000 second-feet; the second applicable since November 28, well defined between 100 and 1,000 second-feet and fairly well defined from 1,000 to 12,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages, when they are fair.

Discharge measurements of Raystown Branch Juniata River at Saxton, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
41	Oct. 6	J. M. Snavely	2.13	372
42	18	do	1.48	156
43	18	do	1.47	157
44	Nov. 29a	do	9.01	11,500
45	Mar. 8	do	6.79	7,320
46	8	do	6.54	6,400
47	9	do	5.23	3,950
48	June 1	do	2.06	352
49	Sept. 7	H. J. McIntyre	1.07	123
50	7	do	1.06	121

a Measurement made by surface method.

Daily Mean Gage Height, in feet, of Raystown Branch Juniata River at Saxton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.83	1.64	4.80	3.22	2.56	3.85	4.17	2.27	1.96	1.98	1.14	1.06
2	1.72	2.12	4.22	2.62	2.84	3.62	4.67	2.23	1.95	1.88	1.11	1.07
3	1.84	2.71	4.75	2.23	4.25	3.59	3.89	2.17	1.95	1.90	1.14	1.10
4	1.61	2.30	4.45	2.77	4.35	3.65	3.72	2.33	2.01	1.84	1.29	1.09
5	2.32	2.08	4.05	2.93	3.80	3.72	3.51	2.92	2.05	1.67	1.30	1.07
6	2.15	1.98	3.82	2.81	3.45	4.37	3.25	2.99	2.17	1.59	1.43	1.05
7	2.00	1.87	3.65	2.55	3.58	5.65	2.96	2.99	2.03	1.51	1.29	1.04
8	1.87	1.82	3.42	2.26	3.37	6.53	2.85	2.91	1.92	1.47	1.24	1.06
9	1.79	1.78	3.31	2.27	3.01	5.19	2.83	2.75	1.81	1.36	1.15	.99
10	1.73	1.82	3.18	2.37	2.86	4.72	2.74	2.53	1.95	1.37	1.15	.97
11	1.71	1.91	3.08	2.16	2.88	4.65	2.68	2.49	1.85	1.38	1.15	1.09
12	1.66	1.96	3.17	2.13	3.32	4.57	2.59	2.45	2.04	1.32	1.09	1.45
13	1.60	1.83	3.30	2.27	4.10	4.27	2.71	2.44	1.96	1.32	1.07	1.28
14	1.55	1.83	3.22	2.71	4.08	4.07	3.15	2.40	1.89	1.28	1.10	1.26
15	1.52	1.81	3.16	2.69	3.68	4.47	4.40	2.34	1.74	1.24	1.09	1.14
16	1.49	1.76	3.00	2.57	3.27	5.57	4.89	2.27	1.66	1.19	1.07	1.08
17	1.46	1.96	2.86	2.63	2.93	4.69	4.42	2.28	1.60	1.18	1.10	1.07
18	1.46	2.84	3.69	2.71	2.92	4.25	4.06	2.91	1.62	1.31	1.18	1.04
19	1.48	3.15	5.12	2.84	3.02	3.95	3.73	4.66	1.60	1.23	1.09	1.02
20	1.50	2.95	4.10	3.26	3.75	3.75	3.36	4.01	1.61	1.26	1.03	.99
21	1.47	2.68	3.75	4.40	5.06	3.59	3.24	3.81	1.63	1.27	.99	.96
22	1.46	2.52	3.55	4.05	4.90	3.32	3.12	3.56	1.51	1.25	.99	.95
23	1.43	2.35	3.13	3.82	5.12	3.07	3.02	3.26	1.46	1.22	1.00	.90
24	1.43	2.26	3.76	3.46	5.05	2.78	2.74	3.01	1.43	1.15	1.01	.87
25	1.46	2.27	4.87	3.25	4.48	2.81	2.66	2.76	1.38	1.14	1.04	.80
26	1.38	2.51	4.40	3.05	4.05	2.78	2.62	2.63	1.15	1.24	.99	.86
27	1.36	2.73	4.05	2.92	3.98	2.72	2.59	2.58	1.39	1.26	1.09	.94
28	1.36	5.60	3.85	3.25	4.38	2.66	2.50	2.48	1.41	1.25	1.07	.95
29	1.31	8.67	3.78	2.85	-------	2.94	2.38	2.32	1.88	1.23	1.03	.93
30	1.33	6.60	3.58	2.89	-------	3.32	2.31	2.10	2.48	1.21	.98	.92
31	1.38	-------	3.38	2.67	-------	3.52	-------	1.98	-------	1.14	1.03	-------

Note.—Stage-discharge relation Jan. 21, 24-28 and Feb. 16-18 affected by ice.

Daily discharge, in second-feet, of Raystown Branch Juniata River at Saxton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	255	192	3,360	1,240	630	1,960	2,480	488	350	370	122	108
2	205	345	2,480	760	898	1,720	3,200	488	350	330	115	108
3	255	690	3,360	488	2,480	1,720	2,090	435	350	330	122	115
4	180	440	2,760	815	2,760	1,720	1,840	542	370	312	150	115
5	468	345	2,220	990	1,960	1,840	1,600	940	390	245	150	108
6	368	305	1,960	855	1,540	2,760	1,300	1,040	435	230	188	108
7	305	255	1,720	665	1,720	4,660	990	1,040	390	200	150	108
8	255	240	1,480	488	1,420	6,400	898	940	330	188	140	108
9	240	240	1,360	488	1,040	4,600	898	815	295	162	122	100
10	220	240	1,240	542	898	3,200	815	665	350	162	122	95
11	205	270	1,140	435	940	3,050	775	630	312	175	122	115
12	192	288	1,190	435	1,360	3,050	700	600	390	150	115	188
13	180	255	1,360	488	2,350	2,620	775	600	350	150	108	150
14	168	255	1,240	775	2,350	2,350	1,190	570	330	150	115	140
15	155	240	1,190	775	1,840	2,900	2,760	542	278	140	115	132
16	153	220	1,040	665	900	4,660	3,520	488	245	130	108	115
17	147	288	898	738	600	3,200	2,760	515	230	130	115	108
18	147	805	1,840	775	650	2,480	2,350	940	230	150	130	108
19	151	1,070	3,840	898	1,040	2,220	1,840	3,200	230	140	115	100
20	155	888	2,350	1,300	1,960	1,960	1,420	2,220	230	140	108	100
21	149	690	1,960	2,200	3,840	1,720	1,300	1,960	245	140	100	95
22	147	555	1,720	2,220	3,520	1,360	1,140	1,720	200	140	100	95
23	141	468	1,190	1,960	3,840	1,090	1,040	1,300	188	130	100	90
24	141	415	1,960	800	3,680	855	815	1,040	188	122	100	85
25	147	415	3,520	650	2,900	855	738	815	175	122	108	80
26	131	555	2,760	700	2,220	855	700	738	122	140	100	85
27	127	728	2,220	700	2,220	775	700	700	175	140	115	95
28	127	4,600	1,960	800	2,760	738	630	630	175	140	108	95
29	117	11,400	1,960	898	-------	990	570	515	330	140	108	95
30	121	6,600	1,720	940	-------	1,360	515	410	630	130	100	90
31	131	-------	1,480	738	-------	1,600	-------	370	-------	122	108	-------

Note.—Discharge Jan. 21, 24-28 and Feb. 16-18 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Frankstown Branch Juniata River at Williamsburg.

Monthly discharge of Raystown Branch Juniata River at Saxton, for the year ending Sept. 30, 1922

(Drainage area 790 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	468	117	190	0.241	0.28
November	11,400	192	1,140	1.44	1.61
December	3,840	898	1,950	2.47	2.85
January	2,220	435	876	1.11	1.28
February	3,840	600	1,940	2.46	2.56
March	6,400	738	2,280	2.89	3.33
April	3,520	515	1,410	1.78	1.99
May	3,200	370	960	1.14	1.31
June	630	122	295	.373	.42
July	370	122	176	.223	.26
August	188	100	119	.151	.17
September	188	80	107	.135	.15
The Year	11,400	80	943	1.19	16.21

SUSQUEHANNA BASIN—STATION NO. 32

TUSCARORA CREEK NEAR PORT ROYAL

Location.—At single-span steel highway bridge about two miles southwest of Port Royal, Juniata County.

Drainage Area.—205 square miles.

Records Available.—August 21, 1911, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Stuart Groninger.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are low but not subject to overflow except during extremely high stages. Bed is composed of gravel and rocks. Control is at a riffle about 500 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 8.4 feet at midnight November 28-29 and at 9 a. m. July 2 (discharge, 3,880 second-feet); minimum, 1.96 feet at 6.15 p. m. Sunday, September 24, when a part of the stream flow was probably being stored at mill dams above gage, (discharge, 7.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—The operation of grist mills above the station may cause variation in stage during low flows.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 15 and 5,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extreme stages when they are fair.

Discharge measurements of Tuscarora Creek near Port Royal, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
28	Feb. 3a	H. J. McIntyre	5.83	653
29	Sept. 6b	do	2.12	17.2

a Measurement made through partial ice cover.
b Measurement made by wading 100 feet above gage.

Daily Mean Gage Height, in feet, of Tuscarora Creek near Port Royal, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.32	2.57	4.16	3.64	3.36	4.10	3.95	2.90	2.66	2.98	2.52	2.22
2	2.24	3.88	4.39	3.20	3.56	3.98	3.84	2.88	2.95	6.88	2.74	2.27
3	2.36	2.92	6.45	3.05	5.60	3.88	3.72	2.85	6.23	6.01	2.57	2.17
4	2.43	2.69	4.80	3.28	5.36	3.94	3.66	3.03	4.66	4.48	2.66	2.32
5	2.54	2.60	4.27	3.41	4.61	4.65	3.56	3.52	4.12	3.92	2.50	2.24
6	2.39	2.48	3.95	3.44	4.40	5.44	3.46	3.24	3.99	3.56	2.41	2.22
7	2.28	2.46	3.72	3.16	4.75	5.68	3.37	3.05	3.62	3.35	2.40	2.22
8	2.25	2.44	3.59	2.98	4.36	6.22	3.34	2.98	3.42	3.16	2.35	2.20
9	2.22	2.46	3.52	3.12	4.06	5.04	3.31	2.92	3.32	3.06	2.44	2.16
10	2.28	2.46	3.40	3.14	3.99	4.63	3.26	2.88	4.68	2.97	2.40	2.04
11	2.28	2.52	3.35	2.94	3.94	4.62	3.22	2.84	4.05	2.86	2.38	2.43
12	2.25	2.51	3.39	3.02	4.18	5.04	3.58	2.90	3.65	2.82	2.28	2.67
13	2.08	2.52	3.48	3.26	4.14	4.59	3.30	2.85	3.34	2.78	2.25	2.45
14	2.16	2.54	3.34	3.50	3.96	4.44	3.37	2.80	3.22	2.74	2.30	2.30
15	2.12	2.48	3.24	3.32	3.91	4.45	5.50	2.78	3.12	2.66	2.34	2.26
16	2.14	2.44	3.12	3.26	3.80	4.32	4.66	2.86	3.02	2.68	2.58	2.20
17	2.28	2.53	3.08	3.19	3.64	4.06	4.28	2.76	2.97	2.64	2.54	2.05
18	2.22	2.68	4.65	3.24	3.73	3.91	4.09	3.00	3.43	2.75	2.38	2.16
19	2.19	2.74	4.80	3.30	3.73	3.76	3.78	4.48	2.89	2.65	2.28	2.22
20	2.28	3.21	4.08	3.34	3.92	3.80	3.68	4.01	2.84	2.56	2.25	2.16
21	2.28	3.32	3.81	3.80	5.62	3.64	3.50	3.56	2.79	2.54	2.26	2.16
22	2.29	3.02	3.33	3.88	5.75	3.54	3.42	3.39	2.78	2.55	2.26	2.22
23	2.25	2.85	3.31	3.85	6.71	3.37	3.32	3.22	2.74	2.61	2.20	2.16
24	2.25	2.71	3.59	3.65	6.16	3.30	3.24	3.08	2.69	2.61	2.21	2.05
25	2.20	2.72	4.04	3.48	4.86	3.30	3.16	3.00	2.62	2.52	2.24	2.12
26	2.18	2.75	3.52	3.33	4.38	3.22	3.14	2.96	2.62	2.48	2.36	2.22
27	2.21	3.13	3.42	3.30	4.32	3.19	3.11	2.92	2.59	2.50	2.28	2.13
28	2.25	6.44	3.28	3.34	4.57	3.58	3.04	2.82	2.66	2.52	2.36	2.10
29	2.22	7.38	3.35	3.41	-------	3.51	2.99	2.79	4.08	2.43	2.41	2.07
30	2.14	5.09	4.00	3.45	-------	3.42	2.93	2.73	3.20	2.38	2.30	2.12
31	2.25	-------	3.88	3.38	-------	3.71	-------	2.70	-------	2.35	2.30	-------

Note.—Stage-discharge relation Dec. 29 to Jan. 3, Jan. 13-19, Jan. 23 to Feb. 11 and Feb. 14-21 affected by ice.

Daily discharge, in second-feet, of Tuscarora Creek near Port Royal, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	69	488	140	150	465	405	120	81	136	63	30
2	32	385	615	130	160	425	368	117	130	2,400	93	35
3	45	124	1,950	140	650	385	315	112	1,790	1,640	69	25
4	55	86	835	205	550	405	300	150	780	670	81	40
5	66	73	535	230	400	725	270	255	465	385	61	32
6	48	59	405	242	380	1,210	242	192	425	270	50	30
7	36	56	315	170	480	1,420	218	150	285	218	49	50
8	33	54	285	136	360	1,790	218	136	230	170	44	28
9	30	56	255	160	220	950	205	124	205	150	54	24
10	36	56	230	170	190	725	192	117	780	134	49	13
11	36	63	218	128	260	725	180	110	445	113	47	53
12	33	62	230	140	510	950	285	120	300	106	36	83
13	16	63	255	170	488	725	205	112	218	100	33	55
14	24	66	218	190	340	642	218	103	180	93	28	38
15	20	59	192	170	240	642	1,280	00	160	81	42	24
16	22	54	160	150	160	560	780	113	140	84	71	28
17	36	65	160	140	150	445	560	97	134	79	66	14
18	30	84	725	150	160	385	465	140	242	95	47	24
19	27	93	835	170	140	332	350	670	118	80	36	30
20	36	180	465	218	220	350	315	425	112	68	33	24
21	36	205	350	350	650	300	255	276	102	66	34	24
22	37	140	218	385	1,490	270	230	230	100	67	34	30
23	33	112	205	320	2,220	218	205	180	93	74	28	24
24	33	89	285	190	1,790	205	192	160	86	74	29	14
25	28	90	445	140	890	205	170	140	76	62	32	20
26	26	95	255	140	615	180	170	132	76	59	45	36
27	29	170	230	150	560	180	160	124	72	61	36	21
28	33	1,950	205	160	725	285	150	106	81	63	45	18
29	30	2,850	170	170	-------	255	138	101	465	53	50	16
30	22	1,020	170	170	-------	230	126	92	180	47	38	20
31	33	-------	170	160	-------	315	-------	87	-------	44	38	-------

Note.—Discharge Dec. 29 to Jan. 3, Jan. 13-19, Jan. 23 to Feb. 11 and Feb. 14-21 estimated, because of ice, from discharge measurement, weather records, study of gage height graph and comparison with similar studies for Frankstown Branch Juniata River at Williamsburg and Raystown Branch Juniata River at Saxton.

Monthly discharge of Tuscarora Creek near Port Royal, for the year ending Sept. 30, 1922

(Drainage area 205 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	66	16	33.5	0.163	0.19
November	2,850	54	284	1.39	1.55
December	1,950	160	389	1.90	2.19
January	385	128	183	.893	1.03
February	2,220	140	541	2.64	2.75
March	1,790	180	545	2.66	3.07
April	1,280	126	306	1.49	1.66
May	670	87	164	.800	.92
June	1,790	72	285	1.39	1.55
July	2,400	44	250	1.22	1.41
August	93	28	47.5	.232	.27
September	83	13	29.6	.144	.16
The Year	2,850	13	253	1.23	16.75

SUSQUEHANNA BASIN—STATION NO. 33

JUNIATA RIVER AT NEWPORT

Location.—At four-span steel highway bridge, Newport, Perry county.

Drainage Area.—3,380 square miles.

Records Available.—March 21, 1899, to July 14, 1906, and January 7, 1907, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by A. R. Bortel. Elevation of gage zero 363.2 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of hard material. Low-water control is at a riffle about 400 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 14.4 feet at 3 a. m. November 30 (discharge, 42,600 second-feet); minimum, 2.84 feet from 5 p. m. September 27 to 8 a. m. September 28 (discharge, 398 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 10,000 second-feet and well defined from 10,000 to 70,000 second-feet. Gage read to hundredths twice daily October 4 to December 31; to half tenths since that date; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by H. J. McIntyre: No. 74, Aug. 30: Gage height, 3.12 feet; discharge, 775 second-feet.

Daily Mean Gage Height, in feet, of Juniata River at Newport, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.5	3.3	9.55	4.45	5.25	6.2	5.5	4.1	3.75	3.75	3.2	3.11
2	3.45	3.8	7.5	4.35	5.25	5.8	6.3	4.05	3.85	4.7	3.35	3.11
3	3.6	4.9	8.0	4.15	7.2	5.5	6.15	4.0	5.8	5.8	3.35	3.07
4	3.32	4.25	7.35	3.95	10.1	5.35	5.8	4.0	5.8	5.95	3.3	3.04
5	3.65	3.9	6.7	4.15	9.5	5.6	5.5	4.5	4.85	4.75	3.3	3.09
6	1,900	2,020	9,360	3,580	6,000	10,000	6,170	4,020	4,020	3,150	1,080	483
7	3.6	3.8	5.75	4.55	7.6	7.25	5.0	4.9	4.4	4.1	3.1	2.95
8	3.6	3.55	5.4	4.2	7.65	9.8	4.8	4.8	4.15	3.95	3.2	3.04
9	3.6	3.75	5.15	4.0	7.2	9.55	4.7	4.65	4.0	3.85	3.1	3.06
10	3.55	3.75	5.0	3.9	6.6	7.8	4.6	4.4	4.1	3.8	3.15	3.00
11	3.35	3.75	4.85	3.75	5.6	7.2	4.6	4.25	4.25	3.6	3.15	2.90
12	3.4	3.75	4.65	5.0	6.0	7.5	4.85	4.2	4.05	3.65	3.1	3.11
13	3.35	3.55	4.7	5.5	6.45	7.1	4.65	4.15	3.75	3.75	3.1	3.14
14	3.2	3.65	4.65	5.85	6.9	6.6	4.65	4.15	3.9	3.45	3.1	3.30
15	3.2	3.4	4.55	6.05	8.1	6.4	6.35	4.0	4.0	3.45	3.1	3.25
16	3.25	3.4	4.45	6.2	8.2	6.55	8.95	3.95	3.7	3.4	3.0	3.06
17	3.15	3.45	4.4	5.8	8.65	6.9	7.95	4.0	3.7	3.35	3.15	3.03
18	3.22	3.65	4.75	5.6	8.65	6.35	7.1	4.0	4.2	3.25	3.15	3.00
19	3.05	4.15	5.75	5.7	8.5	5.8	6.5	4.35	4.0	3.3	3.1	2.93
20	3.2	4.4	6.5	5.8	7.6	5.5	5.75	5.25	3.65	3.3	3.1	2.90
21	3.2	4.15	6.0	5.85	9.7	5.15	5.5	5.65	3.75	3.4	3.05	2.95
22	3.25	4.1	5.4	5.9	8.35	5.1	5.2	5.25	3.45	3.35	3.1	3.06
23	3.22	3.95	5.1	5.9	9.25	4.8	5.05	4.95	3.45	3.3	3.1	3.07
24	3.25	3.95	4.75	6.0	10.15	4.65	4.9	4.65	3.35	3.5	3.1	3.00
25	3.25	3.9	5.05	5.9	8.7	4.55	4.75	4.4	3.4	3.35	3.1	2.90
26	3.05	3.95	5.75	5.5	7.1	4.55	4.6	4.3	3.35	3.45	3.2	2.90
27	3.2	4.0	5.6	5.15	6.4	4.45	4.5	4.3	3.3	3.35	3.3	2.87
28	3.2	6.1	5.25	4.8	6.5	4.65	4.35	4.2	3.25	3.3	3.25	2.85
29	3.2	12.65	5.05	5.1	-------	4.95	4.3	4.0	3.6	3.25	3.2	2.94
30	3.2	13.25	4.9	5.4	-------	4.95	4.15	3.9	3.85	3.3	3.12	2.92
31	3.2	-------	4.65	5.15	-------	5.15	-------	3.95	-------	3.2	3.11	-------

Note.—Stage-discharge relation Jan. 1-5 and Jan. 10 to Feb. 21 affected by ice.

Daily discharge, in second-feet, of Juniata River at Newport, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,470	1,080	21,800	3,400	2,400	9,360	7,120	2,880	2,080	2,090	900	756
2	1,370	2,130	13,000	2,900	2,600	8,080	9,690	2,750	2,250	4,690	1,180	756
3	1,680	5,240	15,800	1,500	4,400	7,120	9,360	2,690	8,080	8,080	1,180	798
4	1,120	3,290	13,500	1,100	7,500	6,800	8,080	2,690	8,080	8,720	1,080	656
5	1,790	2,370	11,000	1,700	8,000	7,440	7,190	4,020	4,930	4,930	1,080	726
6	1,900	2,020	9,360	3,580	6,000	10,000	6,170	4,020	4,020	3,150	1,080	483
7	1,680	2,130	8,080	4,320	5,000	12,800	5,550	5,240	3,720	2,880	740	525
8	1,680	1,580	6,800	3,150	5,000	22,600	4,930	4,930	3,090	2,500	900	656
9	1,680	2,020	6,170	2,690	5,000	21,800	4,690	4,320	2,690	2,250	740	684
10	1,580	2,020	5,550	1,700	3,800	15,000	4,320	3,720	2,880	2,130	820	600
11	1,180	2,090	4,900	1,200	3,400	12,800	4,320	3,200	3,200	1,680	800	548
12	1,270	2,020	4,320	1,900	4,800	13,000	4,930	3,150	2,750	1,700	740	750
13	1,180	1,580	4,620	1,800	6,500	12,500	4,320	3,020	2,020	2,020	740	804
14	900	1,700	4,200	2,600	7,500	10,700	4,200	3,090	2,370	1,370	740	1,190
15	900	1,270	4,320	2,800	6,500	10,000	10,000	2,620	2,620	1,370	740	990
16	900	1,270	3,870	2,600	4,600	10,700	19,500	2,500	1,900	1,270	600	684
17	820	1,370	3,720	1,900	3,900	11,800	15,800	2,620	1,900	1,180	820	642
18	936	1,700	4,930	2,400	2,400	10,000	12,500	2,620	3,150	900	820	600
19	670	3,090	8,080	3,200	2,400	8,080	10,400	3,580	2,620	1,080	740	509
20	900	3,720	10,400	4,400	3,400	7,120	8,080	6,170	1,790	1,080	740	470
21	900	3,090	8,720	6,000	7,000	6,170	7,120	7,440	2,090	1,270	670	595
22	900	2,880	6,800	7,000	17,900	5,860	6,170	6,170	1,370	1,180	740	684
23	936	2,500	5,860	5,500	20,200	4,930	5,550	5,550	1,370	1,080	740	798
24	900	2,500	4,930	3,800	24,200	4,320	5,240	4,320	1,180	1,470	740	600
25	900	2,270	5,550	2,400	18,300	4,320	4,930	3,720	1,270	1,180	740	470
26	670	2,500	8,080	2,400	12,500	4,320	4,320	3,430	1,180	1,370	900	458
27	900	2,620	7,440	2,800	10,000	3,870	4,090	3,430	1,080	1,180	1,080	434
28	900	9,040	6,170	2,800	10,400	4,320	3,580	3,150	900	1,080	900	410
29	900	34,400	5,550	3,600	-------	5,550	3,430	2,690	1,680	900	900	522
30	900	37,100	5,240	3,600	-------	5,550	3,020	2,370	2,250	1,080	772	496
31	900	-------	4,320	2,800	-------	6,170	-------	2,500	-------	900	756	-------

Note.—Discharge Jan. 1-5 and Jan. 10 to Feb. 21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Frankstown Branch Juniata River at Huntingdon, Raystown Branch Juniata River at Saxton and Susquehanna River at Harrisburg.

Monthly discharge of Juniata River at Newport, for the year ending Sept. 30, 1922

(Drainage area 3,380 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,900	670	1,150	0.340	0.39
November	37,100	1,080	4,760	1.41	1.57
December	21,800	3,720	7,550	2.23	2.57
January	7,000	1,100	2,970	.879	1.01
February	24,200	2,400	7,640	2.26	2.35
March	22,600	3,870	9,160	2.71	3.12
April	19,500	3,020	6,950	2.06	2.30
May	7,440	2,370	3,690	1.09	1.26
June	8,080	990	2,680	.793	.88
July	8,720	900	2,190	.648	.75
August	1,180	600	846	.250	.29
September	1,190	410	642	.190	.21
The Year	37,100	410	4,160	1.23	16.70

SUSQUEHANNA BASIN—STATION NO. 34

SUSQUEHANNA RIVER AT HARRISBURG

Location.—At fifteen-span steel highway bridge, Walnut Street, Harrisburg, Dauphin County.

Drainage Area.—24,100 square miles.

Records Available.—January 1, 1891, to September 30, 1922.

Gages.—Standard chain attached to upstream side of bridge; read by employes of the Department of Forests and Waters. Elevation of gage zero 289.4 feet, United States Geological Survey datum. Sanborn water-stage recorder is located on top, downstream corner, of left abutment and referred to same datum as chain gage.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and boulders. A low dam 4,200 feet below the gage, completed on August 29, 1916, is the control for all except high stages.

Extremes of Discharge.—Maximum open water stage during the year, 15.45 feet observed at 10.15 a. m. November 30 (discharge 277,000 second-feet); a stage of 16.3 feet, estimated from water-stage recorder graph, was reached at 4 a. m. February 23, but the water was held back by an ice jam; minimum, 3.18 feet at 5.30 p. m. September 29 and 30 (discharge, 3,900 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 4,000 and 300,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height, computed from a continuous daily hydrograph obtained by plotting chain gage readings in connection with water-stage recorder graph, to rating table. Results good.

The following discharge measurement was made by H. L. Landis; No. 112, Sept. 13, 1922: Gage height, 3.56 feet; discharge, 8,410 second-feet.

Daily Mean Gage Height, in feet, of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.70	3.52	13.03	4.46	6.18	6.72	7.86	4.77	4.28	5.89	3.52	3.96
2	3.64	3.56	10.46	4.83	6.21	6.23	7.79	4.61	4.22	6.14	3.52	3.89
3	3.60	3.89	9.70	5.06	7.13	5.82	8.03	4.55	4.79	7.12	3.55	3.79
4	3.60	4.94	9.36	4.55	8.76	5.52	7.78	4.50	7.38	7.46	3.56	3.66
5	3.56	5.18	8.42	5.49	9.28	5.50	7.59	4.78	8.17	6.88	3.63	3.64
6	3.62	4.90	7.60	5.85	8.95	5.90	8.14	5.04	8.21	6.66	3.62	3.60
7	3.61	4.60	6.93	5.95	9.11	6.22	7.84	5.64	7.47	5.93	3.60	3.56
8	3.60	4.41	6.40	7.19	9.03	9.30	7.28	5.80	6.65	5.46	3.52	3.58
9	3.56	4.28	5.98	9.19	8.54	12.20	7.01	5.70	5.98	5.05	3.51	3.76
10	3.52	4.17	5.70	9.15	8.10	10.94	6.87	5.49	5.58	4.80	3.50	3.66
11	3.56	4.10	5.43	8.94	7.70	9.45	6.72	5.30	5.28	4.61	3.52	3.56
12	3.50	4.10	5.28	7.75	7.58	8.89	6.74	5.07	5.04	4.45	3.51	3.61
13	3.53	4.12	5.13	7.16	7.68	8.92	6.90	4.91	5.35	4.30	3.79	3.56
14	3.62	4.34	5.08	6.60	7.76	8.48	6.84	4.78	6.13	4.17	3.72	3.69
15	3.58	4.42	4.98	6.59	7.66	8.19	7.29	4.68	6.67	4.09	3.62	3.75
16	3.55	4.35	4.88	6.58	7.49	8.36	9.30	4.55	6.15	3.98	3.53	3.93
17	3.50	4.36	4.75	6.46	7.01	8.27	9.62	4.54	5.59	3.90	3.48	3.78
18	3.50	4.50	4.65	6.33	6.92	7.63	8.97	4.51	5.38	3.85	3.43	3.64
19	3.48	4.84	5.34	6.62	6.46	6.92	8.40	4.67	5.99	3.87	3.38	3.52
20	3.49	5.72	5.96	7.20	6.38	6.42	8.15	5.08	6.43	3.80	3.40	3.47
21	3.47	6.39	6.03	7.35	7.82	6.05	7.53	5.64	5.63	3.78	3.30	3.40
22	3.52	6.32	5.70	7.58	10.54	5.80	6.95	5.63	5.28	3.78	3.30	3.38
23	3.62	6.18	5.41	7.67	11.22	5.84	6.46	5.50	5.19	3.73	3.30	3.34
24	3.64	5.83	5.19	7.54	10.43	5.90	6.12	5.35	5.67	3.78	3.30	3.32
25	3.70	5.45	5.05	7.32	10.71	5.64	5.82	5.07	5.89	3.68	3.38	3.30
26	3.80	5.20	5.03	6.70	9.86	5.48	5.61	4.90	5.64	3.62	3.38	3.25
27	3.76	5.35	5.20	6.28	8.47	5.35	5.32	4.86	5.39	3.63	3.33	3.22
28	3.68	6.26	4.93	6.08	7.49	5.50	5.17	4.77	5.05	3.62	4.26	3.20
29	3.64	11.51	4.84	5.82	-------	6.49	5.00	4.68	4.83	3.61	4.49	3.19
30	3.60	15.18	4.62	5.98	-------	8.15	4.89	4.55	5.05	3.60	4.44	3.18
31	3.54	-------	4.64	6.06	-------	8.24	-------	4.46	-------	3.59	4.15	-------

Note.—Stage-discharge relation Dec. 31 to Feb. 24 affected by ice.

Daily discharge, in second-feet, of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9,600	7,300	210,000	18,000	12,000	64,200	90,000	25,800	17,600	47,200	7,300	12,700
2	9,000	7,850	148,000	15,000	16,000	53,500	87,800	22,300	16,100	51,400	7,300	12,000
3	8,400	12,000	129,000	13,000	24,000	45,100	92,100	22,300	25,800	72,800	7,850	10,800
4	8,400	27,600	123,000	11,000	34,000	38,900	87,800	20,700	79,200	81,400	7,850	9,000
5	7,850	33,100	101,000	11,000	36,000	38,900	83,500	25,800	96,400	68,400	9,000	9,000
6	8,400	27,600	83,500	12,000	34,000	47,200	94,200	29,400	96,400	64,200	8,400	8,400
7	8,400	22,300	68,400	17,000	36,000	53,500	87,800	40,900	81,400	47,200	8,400	7,850
8	8,400	19,100	57,700	24,000	34,000	120,000	77,000	45,100	62,000	38,900	7,300	8,400
9	7,850	17,600	49,300	32,000	32,000	188,000	70,600	43,000	49,300	29,400	7,300	10,200
10	7,300	15,400	43,000	30,000	28,000	157,000	68,400	38,900	40,900	25,800	7,300	9,000
11	7,850	14,700	36,900	24,000	24,000	123,000	64,200	35,000	35,000	22,300	7,300	7,850
12	7,300	14,700	35,000	18,000	26,000	112,000	64,200	31,200	29,400	19,900	7,300	8,400
13	7,850	14,700	31,200	15,000	30,000	112,000	68,400	27,600	26,900	17,600	10,800	7,850
14	8,400	18,300	31,200	13,000	28,000	103,000	66,300	25,800	51,400	15,400	9,600	9,600
15	8,400	19,100	29,400	12,000	24,000	96,400	77,000	24,000	64,200	14,700	8,400	10,200
16	7,850	18,300	27,600	11,000	22,000	101,000	120,000	22,300	53,500	13,300	7,850	13,300
17	7,300	18,300	25,800	11,000	20,000	98,600	127,000	20,700	40,900	12,000	7,080	10,800
18	7,300	20,700	22,300	11,000	20,000	83,500	114,000	20,700	36,900	11,400	6,530	9,000
19	7,080	25,800	35,000	12,000	20,000	68,400	101,000	24,000	49,300	11,400	5,900	7,300
20	7,190	43,000	49,300	13,000	20,000	57,700	96,400	31,200	57,700	10,800	6,200	6,970
21	6,970	57,700	49,300	15,000	20,000	49,300	81,400	40,000	40,900	10,800	5,150	6,200
22	7,300	55,600	43,000	18,000	50,000	47,200	70,600	40,900	35,000	10,800	5,150	5,990
23	8,400	53,500	36,900	18,000	100,000	45,100	59,800	38,900	33,100	10,200	5,150	5,570
24	9,000	45,100	33,100	18,000	130,000	47,200	51,400	36,900	43,000	10,800	5,150	5,360
25	9,600	36,900	29,400	18,000	152,000	40,900	45,100	31,200	47,200	9,600	5,990	5,150
26	10,800	33,100	29,400	15,000	134,000	38,900	40,900	27,600	40,900	8,400	5,990	4,620
27	10,200	36,900	33,100	13,000	103,000	36,900	35,000	27,600	36,900	9,000	5,460	4,310
28	9,600	55,600	27,600	12,000	81,400	38,900	33,100	25,800	29,400	8,400	16,800	4,100
29	9,000	171,000	25,800	11,000	-------	59,800	29,400	24,000	25,800	8,400	20,700	4,000
30	8,400	271,000	22,300	11,000	-------	96,400	27,600	22,300	29,400	8,400	19,900	3,990
31	7,850	-------	20,000	11,000	-------	96,400	-------	19,900	------	8,400	15,400	-------

Note.—Discharge Dec. 31 to Feb. 24, estimated, because of ice, from weather records, study of gage height graph and discharge of the Susquehanna River at Holtwood.

Monthly discharge of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1922

(Drainage area 24,100 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	10,800	6,970	8,300	0.344	0.40
November	271,000	7,300	40,500	1.68	1.87
December	210,000	20,000	54,400	2.26	2.61
January	32,000	11,000	15,600	.647	.75
February	152,000	12,000	46,400	1.93	2.01
March	188,000	36,900	76,100	3.16	3.64
April	127,000	27,600	73,700	3.06	3.41
May	45,100	19,900	29,400	1.22	1.41
June	96,400	16,100	46,100	1.91	2.13
July	81,400	8,400	25,100	1.04	1.20
August	20,700	5,150	8,580	.356	.41
September	13,300	3,900	7,930	.329	.37
The Year	271,000	3,900	35,900	1.49	20.21

SUSQUEHANNA BASIN—STATION NO. 35

LITTLE SWATARA CREEK NEAR PINE GROVE

Location.—At single-span steel highway bridge, about three-quarters of a mile upstream from mouth of creek and one mile southeast of Pine Grove, Schuylkill County.

Drainage Area.—34 square miles.

Records Available.—November 18, 1919, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Lottie Mars.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are of medium height; overflow begins at a stage of about 6 feet. Bed is composed of coarse gravel. Control is at a riffle, at the upstream end of an island, about 100 feet below gage. Bed at control is coarse gravel; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.3 feet at 6 p. m. February 20 (discharge, about 1,090 second-feet); minimum, 1.01 feet at 6 p. m. September 28 (discharge, 2.8 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with J. G. White Management Corporation, New York City.

The following discharge measurement was made by J. M. Snavely: No. 17, Aug. 3: Gage height, 1.44 feet; discharge, 19.9 second-feet.

Daily Mean Gage Height, in feet, of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.15	1.34	2.22	2.28	2.44	2.17	2.22	1.57	1.62	1.88	1.61	1.27
2	1.07	1.50	2.32	2.21	4.22	2.17	2.06	1.54	1.94	3.40	1.44	1.26
3	1.36	1.26	3.52	2.09	4.09	2.07	2.00	1.59	2.25	2.58	1.52	1.28
4	1.29	1.23	2.99	2.15	3.18	2.05	2.02	2.04	2.22	2.30	1.89	1.26
5	1.18	1.23	2.60	2.50	2.80	2.60	1.93	3.08	2.11	2.14	1.61	1.25
6	1.15	1.18	2.33	2.20	2.81	2.52	1.90	2.34	2.19	2.03	1.50	1.26
7	1.18	1.18	2.14	1.92	3.12	3.58	1.94	2.18	1.97	1.88	1.46	1.18
8	1.14	1.16	1.99	1.91	2.74	3.65	1.88	2.02	1.93	1.81	1.44	1.19
9	1.22	1.21	1.90	2.03	2.58	2.84	1.86	1.90	1.87	2.06	1.40	1.22
10	1.14	1.45	1.86	1.96	2.56	2.56	1.83	1.87	1.82	1.87	1.36	1.17
11	1.12	1.26	1.80	1.84	2.48	2.58	1.80	1.87	1.77	1.83	1.34	1.18
12	1.15	1.28	1.73	2.08	2.61	2.47	1.82	1.76	1.74	1.78	1.34	1.30
13	1.19	1.26	1.77	2.12	2.28	2.34	1.76	1.73	1.65	1.73	1.33	1.20
14	1.14	1.24	1.66	2.12	1.82	2.29	1.83	1.78	1.61	1.68	1.30	1.25
15	1.10	1.27	1.64	2.12	2.39	2.24	2.52	1.78	1.60	1.64	1.33	1.19
16	1.15	1.25	1.78	2.14	2.18	2.15	2.18	1.67	1.54	1.60	1.30	1.13
17	1.09	1.32	1.63	2.04	1.99	2.06	2.09	1.71	1.64	1.63	1.28	1.12
18	1.09	1.33	2.14	2.26	1.92	1.96	2.07	2.30	2.36	1.55	1.26	1.16
19	1.10	1.27	1.91	2.20	2.18	1.96	1.98	2.92	2.06	1.63	1.26	1.09
20	1.45	1.75	1.88	2.44	4.14	2.41	1.90	2.62	1.64	1.54	1.27	1.15
21	1.23	1.67	1.86	2.45	3.52	2.28	1.83	2.37	1.61	1.49	1.22	1.15
22	1.22	1.54	1.84	2.38	2.27	2.22	1.78	2.14	1.57	1.46	1.21	1.10
23	1.12	1.54	2.06	2.39	3.32	2.08	1.77	2.04	1.52	1.45	1.20	1.10
24	1.12	1.50	2.01	2.24	3.13	2.07	1.73	1.94	1.42	1.48	1.22	1.10
25	1.12	1.42	1.82	2.14	2.56	1.96	1.70	1.84	1.48	1.43	1.33	1.04
26	1.13	1.45	1.78	2.24	2.40	1.90	1.67	1.86	1.46	1.44	1.28	1.05
27	1.12	1.55	1.74	2.29	2.61	1.88	1.68	1.79	1.42	1.41	1.23	1.08
28	1.12	3.81	1.84	2.33	2.34	1.96	1.61	1.75	1.42	1.45	1.24	1.02
29	1.10	3.53	1.66	2.39	-------	1.88	1.56	1.68	1.42	1.38	1.24	1.08
30	1.10	2.63	2.08	2.36	-------	1.81	1.57	1.67	1.52	1.34	1.23	1.11
31	1.12	-------	2.51	2.38	-------	1.90	-------	1.60	-------	1.33	1.26	-------

Note.—Stage-discharge relation Dec. 16, 28 and Dec. 30 to Feb. 21 affected by ice.

Daily discharge, in second-feet, of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	11	121	32	28	111	121	25	29	59	28	8.0
2	3.6	20	143	34	320	111	89	23	68	393	16	7.7
3	12	7.7	417	32	220	91	78	26	128	205	21	8.4
4	8.7	6.8	297	36	95	87	82	85	121	139	61	7.7
5	5.6	6.8	205	70	70	205	67	321	98	104	28	7.4
6	5.0	5.6	146	55	80	183	62	148	115	83	20	7.7
7	5.6	5.6	104	42	120	441	68	113	73	59	18	5.6
8	4.8	5.2	76	36	48	441	59	82	67	49	16	5.8
9	6.6	6.3	62	32	36	262	56	62	58	89	14	6.6
10	4.8	17	56	28	32	194	52	58	51	58	12	5.4
11	4.4	7.7	48	28	42	205	48	58	44	52	11	5.6
12	5.0	8.4	40	32	80	176	51	43	41	46	11	9.1
13	5.8	7.7	44	34	60	148	43	40	32	40	10	6.1
14	4.8	7.1	32	36	48	137	52	46	28	34	9.1	7.4
15	4.0	8.0	31	32	36	126	183	46	27	31	10	5.8
16	5.0	7.4	28	30	36	106	113	33	23	27	9.1	4.6
17	3.9	10	30	28	32	89	94	37	31	30	8.4	4.4
18	3.9	10	104	28	36	72	91	139	152	24	7.7	5.2
19	4.0	8.0	64	28	42	72	75	274	89	30	7.7	3.9
20	17	42	59	32	70	163	62	205	31	23	8.0	5.0
21	6.8	33	56	38	120	135	52	154	28	19	6.6	5.0
22	6.6	23	54	60	132	121	46	104	25	18	6.3	4.0
23	4.4	23	89	42	369	92	44	85	21	17	6.1	4.0
24	4.4	20	80	32	321	91	40	68	15	19	6.6	4.0
25	4.4	15	51	28	194	72	36	54	19	16	10	3.1
26	4.6	17	46	24	161	62	33	56	18	16	8.4	3.3
27	4.4	24	41	20	205	59	34	47	15	15	6.8	3.7
28	4.4	489	36	20	148	72	28	42	15	17	7.1	2.9
29	4.0	417	32	26	-------	59	24	34	15	13	7.1	3.7
30	4.0	216	30	32	-------	49	25	33	21	11	6.8	4.2
31	4.4	-------	28	30	-------	62	-------	27	-------	10	7.7	-------

Note.—Discharge Dec. 16, 28 and Dec. 30 to Feb. 21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Swatara Creek at Harpers.

Monthly discharge of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1922

(Drainage area 34 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	17	3.6	5.55	0.163	0.19
November	489	5.2	49.5	1.46	1.63
December	417	28	85.5	2.51	2.89
January	70	20	34.1	1.00	1.15
February	369	28	114	3.35	3.49
March	441	49	139	4.09	4.72
April	183	24	63.6	1.87	2.09
May	321	23	82.8	2.44	2.81
June	152	15	49.9	1.47	1.64
July	393	10	56.3	1.66	1.91
August	28	6.1	13.1	.385	.44
September	9.1	2.9	5.51	.162	.18
The Year	489	2.9	57.9	1.70	23.14

SUSQUEHANNA BASIN—STATION NO. 36

SWATARA CREEK AT HARPERS

Location.—At two-span steel highway bridge, Harpers, Lebanon County, about five miles northwest of Annville.

Drainage Area.—334 square miles.

Records Available.—December 17, 1918, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Elmer G. Shuey.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—At low and medium stages, the stream flows under the left span of the bridge. There is a flood plain under the right span which is covered by water during high stages. Outside of the flood plain both banks are high and do not overflow. Bed is composed of culm and gravel. Control is at a riffle about 300 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 10.4 feet at 4 a. m. March 8 (discharge, about 7,880 second-feet); minimum, 0.18 foot at 6.15 p. m. September 27 (discharge, 19 second-feet).

Monthly discharge of Juniata River at Newport, for the year ending Sept. 30, 1922

(Drainage area 3,380 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,900	670	1,150	0.340	0.39
November	37,100	1,080	4,760	1.41	1.57
December	21,800	3,720	7,550	2.23	2.57
January	7,000	1,100	2,970	.879	1.01
February	24,200	2,400	7,640	2.26	2.35
March	22,600	3,870	9,160	2.71	3.12
April	19,500	3,020	6,950	2.06	2.50
May	7,440	2,370	3,690	1.09	1.26
June	8,080	990	2,680	.793	.88
July	8,720	900	2,190	.648	.75
August	1,180	600	846	.250	.29
September	1,190	410	642	.190	.21
The Year	37,100	410	4,160	1.23	16.70

SUSQUEHANNA BASIN—STATION NO. 34

SUSQUEHANNA RIVER AT HARRISBURG

Location.—At fifteen-span steel highway bridge, Walnut Street, Harrisburg, Dauphin County.

Drainage Area.—24,100 square miles.

Records Available.—January 1, 1891, to September 30, 1922.

Gages.—Standard chain attached to upstream side of bridge; read by employes of the Department of Forests and Waters. Elevation of gage zero 289.4 feet, United States Geological Survey datum. Sanborn water-stage recorder is located on top, downstream corner, of left abutment and referred to same datum as chain gage.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and boulders. A low dam 4,200 feet below the gage, completed on August 29, 1916, is the control for all except high stages.

Extremes of Discharge.—Maximum open water stage during the year, 15.45 feet observed at 10.15 a. m. November 30 (discharge 277,000 second-feet); a stage of 16.3 feet, estimated from water-stage recorder graph, was reached at 4 a. m. February 23, but the water was held back by an ice jam; minimum, 3.18 feet at 5.30 p. m. September 29 and 30 (discharge, 3,900 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 4,000 and 300,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height, computed from a continuous daily hydrograph obtained by plotting chain gage readings in connection with water-stage recorder graph, to rating table. Results good.

The following discharge measurement was made by H. L. Landis; No. 112, Sept. 13, 1922: Gage height, 3.56 feet; discharge, 8,410 second-feet.

Daily Mean Gage Height, in feet, of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.70	3.52	13.03	4.46	6.18	6.72	7.86	4.77	4.28	5.89	3.52	3.96
2	3.64	3.56	10.46	4.83	6.21	6.23	7.79	4.61	4.22	6.14	3.52	3.89
3	3.60	3.89	9.70	5.06	7.13	5.82	8.03	4.55	4.79	7.12	3.55	3.79
4	3.60	4.94	9.36	4.55	8.76	5.52	7.78	4.50	7.38	7.46	3.56	3.66
5	3.56	5.18	8.42	5.49	9.28	5.50	7.59	4.78	8.17	6.88	3.63	3.64
6	3.62	4.90	7.60	5.85	8.95	5.90	8.14	5.04	8.21	6.60	3.62	3.60
7	3.61	4.60	6.93	5.95	9.11	6.22	7.84	5.64	7.47	5.93	3.60	3.56
8	3.60	4.41	6.40	7.19	9.03	9.30	7.28	5.80	6.65	5.46	3.52	3.58
9	3.56	4.28	5.98	9.19	8.54	12.20	7.01	5.70	5.96	5.05	3.51	3.76
10	3.52	4.17	5.70	9.15	8.10	10.94	6.87	5.49	5.58	4.80	3.50	3.66
11	3.56	4.10	5.43	8.94	7.70	9.45	6.72	5.30	5.28	4.61	3.52	3.56
12	3.50	4.10	5.28	7.75	7.58	8.89	6.74	5.07	5.04	4.45	3.51	3.61
13	3.53	4.12	5.13	7.16	7.68	8.92	6.90	4.91	5.35	4.30	3.79	3.56
14	3.62	4.34	5.08	6.60	7.76	8.48	6.84	4.78	6.13	4.17	3.72	3.69
15	3.58	4.42	4.98	6.59	7.66	8.19	7.29	4.68	6.67	4.09	3.62	3.75
16	3.55	4.35	4.88	6.58	7.46	8.26	9.30	4.55	6.15	3.98	3.53	3.93
17	3.50	4.36	4.75	6.46	7.01	8.27	9.65	4.54	5.59	3.89	3.48	3.78
18	3.50	4.50	4.65	6.33	6.92	7.63	8.97	4.51	5.38	3.85	3.43	3.64
19	3.48	4.84	5.34	6.62	6.46	6.92	8.40	4.67	5.99	3.87	3.38	3.52
20	3.49	5.72	5.96	7.20	6.38	6.42	8.15	5.08	6.43	3.80	3.40	3.47
21	3.47	6.39	6.03	7.35	7.82	6.05	7.53	5.64	5.62	3.78	3.30	3.40
22	3.52	6.32	5.70	7.58	10.54	5.89	6.95	5.63	5.28	3.78	3.30	3.38
23	3.62	6.18	5.41	7.67	11.22	5.84	6.46	5.50	5.19	3.73	3.30	3.34
24	3.64	5.83	5.19	7.54	10.43	5.90	6.12	5.35	5.67	3.78	3.30	3.32
25	3.70	5.45	5.05	7.32	10.71	5.64	5.82	5.07	5.89	3.68	3.38	3.30
26	3.80	5.20	5.03	6.70	9.86	5.48	5.61	4.90	5.64	3.62	3.38	3.25
27	3.76	5.35	5.20	6.28	8.47	5.35	5.32	4.86	5.39	3.63	3.33	3.22
28	3.68	6.26	4.93	6.08	7.49	5.50	5.17	4.77	5.05	3.62	4.26	3.20
29	3.64	11.51	4.84	5.82	-------	6.49	5.00	4.68	4.83	3.61	4.49	3.19
30	3.60	15.18	4.62	5.98	-------	8.15	4.89	4.55	5.05	3.60	4.44	3.18
31	3.54	-------	4.64	6.06	-------	8.24	-------	4.46	-------	3.59	4.15	-------

Note.—Stage-discharge relation Dec. 31 to Feb. 24 affected by ice.

Daily discharge, in second-feet, of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9,600	7,300	210,000	18,000	12,000	64,200	90,000	25,800	17,600	47,200	7,300	12,700
2	9,000	7,850	148,000	15,000	16,000	53,500	87,800	22,300	16,100	51,400	7,300	12,000
3	8,400	12,000	129,000	13,000	24,000	45,100	92,100	22,300	25,800	72,800	7,850	10,800
4	8,400	27,600	123,000	11,000	34,000	38,900	87,800	20,700	79,200	81,400	7,850	9,000
5	7,850	33,100	101,000	11,000	36,000	38,900	83,500	25,800	96,400	68,400	9,000	9,000
6	8,400	27,600	83,500	12,000	34,000	47,200	94,200	29,400	96,400	64,200	8,400	8,400
7	8,400	22,300	68,400	17,000	36,000	53,500	87,800	40,900	81,400	47,200	8,400	7,850
8	8,400	19,100	57,700	24,000	34,000	120,000	77,000	45,100	62,000	38,900	7,300	8,400
9	7,850	17,600	49,300	32,000	32,000	188,000	70,600	43,000	49,300	29,400	7,300	10,200
10	7,300	15,400	43,000	30,000	28,000	157,000	68,400	38,900	40,900	25,800	7,300	9,000
11	7,850	14,700	36,900	24,000	24,000	123,000	64,200	35,000	35,000	22,300	7,300	7,850
12	7,300	14,700	35,000	18,000	26,000	112,000	64,200	31,200	29,400	19,900	7,300	8,400
13	7,850	14,700	31,200	15,000	30,000	112,000	68,400	27,600	26,900	17,600	10,800	7,850
14	8,400	18,300	31,200	13,000	28,000	103,000	66,300	25,800	51,400	15,400	9,600	9,600
15	8,400	19,100	29,400	12,000	24,000	96,400	77,000	24,000	64,200	14,700	8,400	10,200
16	7,850	18,300	27,600	11,000	22,000	101,000	120,000	22,300	53,500	13,300	7,850	13,300
17	7,300	18,300	25,800	11,000	20,000	98,600	127,000	20,700	40,900	12,000	7,080	10,800
18	7,300	20,700	22,300	11,000	20,000	83,500	114,000	20,700	36,900	11,400	6,530	9,000
19	7,080	25,800	35,000	12,000	20,000	68,400	101,000	24,000	49,300	11,400	5,900	7,300
20	7,190	43,000	49,300	13,000	20,000	57,700	96,400	31,200	57,700	10,800	6,200	6,970
21	6,970	57,700	49,300	15,000	20,000	49,300	81,400	40,900	40,900	10,800	5,150	6,200
22	7,300	55,600	43,000	18,000	50,000	47,200	70,600	40,900	35,000	10,800	5,150	5,900
23	8,400	53,500	36,900	18,000	100,000	45,100	59,800	38,900	33,100	10,200	5,150	5,570
24	9,000	45,100	33,100	18,000	130,000	47,200	51,400	36,900	43,000	10,800	5,150	5,360
25	9,600	36,900	29,400	18,000	152,000	40,900	45,100	31,200	47,200	9,600	5,900	5,150
26	10,800	33,100	29,400	15,000	134,000	38,900	40,900	27,600	40,900	8,400	5,900	4,620
27	10,200	36,900	33,100	13,000	103,000	36,900	35,000	27,600	36,900	9,000	5,460	4,310
28	9,600	55,600	27,600	12,000	81,400	38,900	33,100	25,800	29,400	8,400	16,800	4,700
29	9,000	171,000	25,800	11,000	-------	50,800	29,400	24,000	25,800	8,400	20,700	4,000
30	8,400	271,000	22,300	11,000	-------	96,400	27,600	22,300	29,400	8,400	19,900	3,900
31	7,850	-------	20,000	11,000	-------	96,400	-------	19,900	------	8,400	15,400	-------

Note.—Discharge Dec. 31 to Feb. 24, estimated, because of ice, from weather records, study of gage height graph and discharge of the Susquehanna River at Holtwood.

Monthly discharge of Susquehanna River at Harrisburg, for the year ending Sept. 30, 1922

(Drainage area 24,100 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	10,800	6,970	8,300	0.344	0.40
November	271,000	7,300	40,500	1.68	1.87
December	210,000	20,000	54,400	2.26	2.61
January	32,000	11,000	15,600	.647	.75
February	152,000	12,000	46,400	1.93	2.01
March	188,000	36,900	76,100	3.16	3.64
April	127,000	27,600	73,700	3.06	3.41
May	45,100	19,900	29,400	1.22	1.41
June	96,400	16,100	46,100	1.91	2.13
July	81,400	8,400	25,100	1.04	1.20
August	20,700	5,150	8,580	.356	.41
September	13,300	3,900	7,930	.329	.37
The Year	271,000	3,900	35,900	1.49	20.21

SUSQUEHANNA BASIN—STATION NO. 35

LITTLE SWATARA CREEK NEAR PINE GROVE

Location.—At single-span steel highway bridge, about three-quarters of a mile upstream from mouth of creek and one mile southeast of Pine Grove, Schuylkill County.

Drainage Area.—34 square miles.

Records Available.—November 18, 1919, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Lottie Mars.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are of medium height; overflow begins at a stage of about 6 feet. Bed is composed of coarse gravel. Control is at a riffle, at the upstream end of an island, about 100 feet below gage. Bed at control is coarse gravel; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 6.3 feet at 6 p. m. February 20 (discharge, about 1,090 second-feet); minimum, 1.01 feet at 6 p. m. September 28 (discharge, 2.8 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with J. G. White Management Corporation, New York City.

The following discharge measurement was made by J. M. Snavely: No. 17, Aug. 3: Gage height, 1.44 feet; discharge, 19.9 second-feet.

Daily Mean Gage Height, in feet, of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.15	1.34	2.22	2.28	2.44	2.17	2.22	1.57	1.62	1.88	1.61	1.27
2	1.07	1.50	2.32	2.21	4.22	2.17	2.06	1.54	1.94	3.40	1.44	1.26
3	1.36	1.26	3.52	2.09	4.09	2.07	2.00	1.59	2.25	2.58	1.52	1.28
4	1.29	1.23	2.99	2.15	3.18	2.05	2.02	2.04	2.22	2.30	1.89	1.26
5	1.18	1.23	2.60	2.50	2.80	2.60	1.93	3.08	2.11	2.14	1.61	1.25
6	1.15	1.18	2.33	2.20	2.81	2.52	1.90	2.34	2.19	2.03	1.50	1.26
7	1.18	1.18	2.14	1.92	3.12	3.58	1.94	2.18	1.97	1.88	1.46	1.18
8	1.14	1.16	1.99	1.91	2.74	3.65	1.88	2.02	1.93	1.81	1.44	1.19
9	1.22	1.21	1.90	2.03	2.58	2.84	1.86	1.90	1.87	2.06	1.40	1.22
10	1.14	1.45	1.86	1.96	2.56	2.56	1.83	1.87	1.82	1.87	1.36	1.17
11	1.12	1.26	1.80	1.84	2.48	2.58	1.80	1.87	1.77	1.83	1.34	1.18
12	1.15	1.28	1.73	2.08	2.61	2.47	1.82	1.76	1.74	1.78	1.34	1.30
13	1.19	1.26	1.77	2.12	2.28	2.34	1.76	1.73	1.65	1.73	1.33	1.20
14	1.14	1.24	1.66	2.12	1.82	2.29	1.83	1.78	1.61	1.68	1.30	1.25
15	1.10	1.27	1.64	2.12	2.39	2.24	2.52	1.78	1.60	1.64	1.33	1.19
16	1.15	1.25	1.78	2.14	2.18	2.15	2.18	1.67	1.54	1.60	1.30	1.13
17	1.09	1.32	1.63	2.04	1.99	2.06	2.09	1.71	1.64	1.63	1.28	1.12
18	1.09	1.33	2.14	2.26	1.92	1.96	2.07	2.30	2.86	1.55	1.26	1.16
19	1.10	1.27	1.91	2.20	2.18	1.96	1.98	2.92	2.06	1.63	1.26	1.09
20	1.45	1.75	1.88	2.44	4.14	2.41	1.90	2.62	1.64	1.54	1.27	1.15
21	1.23	1.67	1.86	2.45	3.52	2.28	1.83	2.37	1.61	1.49	1.22	1.15
22	1.22	1.54	1.84	2.38	2.27	2.22	1.78	2.14	1.57	1.46	1.21	1.10
23	1.12	1.54	2.06	2.39	3.32	2.08	1.77	2.04	1.52	1.45	1.20	1.10
24	1.12	1.50	2.01	2.24	3.13	2.07	1.73	1.94	1.42	1.48	1.22	1.10
25	1.12	1.42	1.82	2.14	2.56	1.96	1.70	1.84	1.48	1.43	1.33	1.04
26	1.13	1.45	1.78	2.24	2.40	1.90	1.67	1.86	1.46	1.44	1.28	1.05
27	1.12	1.55	1.74	2.29	2.61	1.88	1.68	1.79	1.42	1.41	1.23	1.08
28	1.12	3.81	1.84	2.33	2.34	1.96	1.61	1.75	1.42	1.45	1.24	1.02
29	1.10	3.53	1.66	2.39	-------	1.88	1.56	1.68	1.42	1.38	1.24	1.08
30	1.10	2.63	2.08	2.36	-------	1.81	1.57	1.67	1.52	1.34	1.23	1.11
31	1.12	-------	2.51	2.38	-------	1.90	-------	1.60	-------	1.33	1.26	-------

Note.—Stage-discharge relation Dec. 16, 28 and Dec. 30 to Feb. 21 affected by ice.

Daily discharge, in second-feet, of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	11	121	32	28	111	121	25	29	59	28	8.0
2	3.6	20	143	34	320	111	89	23	68	393	16	7.7
3	12	7.7	417	32	220	91	78	26	128	205	21	8.4
4	8.7	6.8	297	36	95	87	82	85	121	139	61	7.7
5	5.6	6.8	205	70	70	205	67	321	98	104	28	7.4
6	5.0	5.6	146	55	80	183	62	148	115	83	20	7.7
7	5.6	5.6	104	42	120	441	68	113	73	59	18	5.6
8	4.8	5.2	76	36	48	441	59	82	67	49	16	5.2
9	6.6	6.3	62	32	36	262	56	62	58	89	14	6.6
10	4.8	17	56	28	32	194	52	58	51	58	12	5.4
11	4.4	7.7	48	28	42	205	48	58	44	52	11	5.6
12	5.0	8.4	40	32	80	176	51	43	41	46	11	9.1
13	5.8	7.7	44	34	60	148	43	40	32	40	10	6.1
14	4.8	7.1	32	36	48	137	52	46	28	34	9.1	7.4
15	4.0	8.0	31	32	36	126	183	46	27	31	10	5.8
16	5.0	7.4	28	30	36	106	113	33	23	27	9.1	4.6
17	3.9	10	30	28	32	89	94	37	31	30	8.4	4.4
18	3.9	10	104	28	36	72	91	139	152	24	7.7	5.2
19	4.0	8.0	64	28	42	72	75	274	89	30	7.7	3.9
20	17	42	59	32	70	163	62	205	31	23	8.0	5.0
21	6.8	33	56	38	120	135	52	154	28	19	6.6	5.0
22	6.6	23	54	60	132	121	46	104	25	18	6.3	4.0
23	4.4	23	89	42	369	92	44	85	21	17	6.1	4.0
24	4.4	20	80	32	321	91	40	68	15	19	6.6	4.0
25	4.4	15	51	28	194	72	36	54	19	16	10	3.1
26	4.6	17	46	24	161	62	33	56	18	16	8.4	3.3
27	4.4	24	41	20	205	59	34	47	15	15	6.8	3.7
28	4.4	439	36	20	148	72	28	42	15	17	7.1	2.9
29	4.0	417	32	26	-------	59	24	34	15	13	7.1	3.7
30	4.0	216	30	32	-------	49	25	33	21	11	6.8	4.2
31	4.4	-------	28	30	-------	62	-------	27	-------	10	7.7	-------

Note.—Discharge Dec. 16, 28 and Dec. 30 to Feb. 21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Swatara Creek at Harpers.

Monthly discharge of Little Swatara Creek near Pine Grove, for the year ending Sept. 30, 1922

(Drainage area 34 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	17	3.6	5.55	0.163	0.19
November	489	5.2	49.5	1.46	1.63
December	417	28	85.5	2.51	2.89
January	70	20	34.1	1.00	1.15
February	369	28	114	3.35	3.49
March	441	49	139	4.09	4.72
April	183	24	63.6	1.87	2.09
May	321	23	82.8	2.44	2.81
June	152	15	49.9	1.47	1.64
July	393	10	56.3	1.66	1.91
August	28	6.1	13.1	.385	.44
September	9.1	2.9	5.51	.162	.18
The Year	489	2.9	57.9	1.70	23.14

SUSQUEHANNA BASIN—STATION NO. 36

SWATARA CREEK AT HARPERS

Location.—At two-span steel highway bridge, Harpers, Lebanon County, about five miles northwest of Annville.

Drainage Area.—334 square miles.

Records Available.—December 17, 1918, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Elmer G. Shuey.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—At low and medium stages, the stream flows under the left span of the bridge. There is a flood plain under the right span which is covered by water during high stages. Outside of the flood plain both banks are high and do not overflow. Bed is composed of culm and gravel. Control is at a riffle about 300 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 10.4 feet at 4 a. m. March 8 (discharge, about 7,880 second-feet); minimum, 0.18 foot at 6.15 p. m. September 27 (discharge, 19 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 500 second-feet and fairly well defined between 500 and 6,000 second-feet. Gage read to hundredths twice daily; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Swatara Creek at Harpers, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
17	Oct. 31a	J. M. Snavely	0.21	23.2
18	31b	do	.22	23.4
19	Aug. 3	do	.76	159

a Measurement made by wading 100 feet below gage.
b Measurement made by wading 25 feet above gage.

Daily Mean Gage Height, in feet, of Swatara Creek at Harpers, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.32	0.46	2.95	1.92	1.22	2.96	3.06	1.15	1.16	1.89	0.70	0.40
2	.30	1.15	3.88	1.50	3.70	2.78	2.52	1.12	1.52	5.04	.82	.41
3	.38	.68	7.09	1.43	5.77	2.67	2.32	1.12	4.22	4.75	.80	.37
4	.52	.51	4.37	1.44	3.29	2.82	2.34	1.42	4.31	3.88	.94	.36
5	.48	.37	3.55	2.02	2.34	3.78	2.34	3.77	3.37	2.98	.77	.41
6	.42	.32	3.04	2.35	2.52	4.20	2.06	2.95	4.20	2.54	.62	.35
7	.36	.32	2.58	1.64	3.18	5.46	2.10	2.52	3.40	2.18	.58	.34
8	.32	.31	2.32	1.38	1.94	8.24	2.13	2.26	2.68	2.03	.58	.34
9	.32	.30	2.02	1.24	1.74	5.21	1.90	1.92	2.44	2.88	.56	.35
10	.38	.44	1.80	1.20	1.64	4.47	1.86	1.80	2.29	1.86	.49	.34
11	.36	.48	1.74	1.12	1.61	4.50	1.67	1.68	2.20	1.67	.46	.32
12	.34	.48	1.72	1.08	2.20	4.26	2.21	1.58	2.37	1.58	.43	.77
13	.32	.46	1.82	1.73	2.32	3.56	1.91	1.49	1.72	1.38	.40	.54
14	.34	.50	1.52	1.64	2.03	-------	2.00	1.44	1.54	1.24	.49	.42
15	.29	.46	1.30	1.42	1.92	-------	3.87	1.78	1.47	1.16	.50	.36
16	.24	.40	1.22	1.37	1.52	-------	3.21	1.62	1.34	1.11	.46	.33
17	.24	.52	1.28	1.26	1.78	-------	2.94	1.34	1.26	1.03	.51	.30
18	.31	.56	2.58	1.06	2.84	2.42	2.93	2.05	4.08	1.10	.47	.28
19	.32	.56	2.46	1.23	2.20	2.30	2.56	3.88	2.67	1.06	.66	.36
20	.34	.93	2.13	1.36	2.70	3.28	2.28	3.95	2.04	1.02	.48	.32
21	.46	1.19	1.98	1.68	3.94	3.00	2.08	3.06	1.88	.94	.34	.28
22	.38	.90	1.60	2.11	3.90	2.56	1.96	2.68	1.94	.82	.34	.27
23	.32	.72	1.64	1.74	5.24	2.38	1.80	2.31	1.55	.77	.34	.24
24	.30	.64	1.92	1.36	5.86	2.29	1.71	2.10	1.34	.88	.35	.22
25	.32	.71	2.25	1.20	3.99	2.15	1.58	1.88	1.22	.85	.41	.22
26	.32	.70	1.94	1.19	3.64	1.99	1.52	2.06	1.18	.75	.46	.22
27	.33	.78	1.69	1.00	4.06	1.96	1.48	1.76	1.10	.74	.43	.20
28	.31	4.55	1.44	.97	3.74	2.34	1.33	1.56	1.09	.78	.44	.22
29	.32	6.21	1.41	1.22	-------	2.06	1.26	1.44	1.08	.77	.44	.28
30	.34	4.04	2.16	1.28	-------	1.92	1.21	1.33	2.02	.60	.39	.27
31	.23	-------	2.39	1.23	-------	2.12	-------	1.21	-------	.60	.40	-------

Note.—Stage-discharge relation Dec. 30 to Jan. 3, Jan. 13-17, Jan. 29 to Feb. 2 and Feb. 17 and 18 affected by ice. Gage height Mar. 14-17 not observed.

Daily discharge, in second-feet, of Swatara Creek at Harpers, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	82	1,050	300	220	1,050	1,110	255	255	520	140	68
2	45	255	1,640	280	1,000	945	795	240	365	2,450	170	70
3	63	135	4,320	280	3,120	895	695	240	1,850	2,290	165	61
4	96	93	1,990	318	1,230	945	695	330	1,920	1,640	200	59
5	86	61	1,430	560	695	1,570	695	1,570	1,290	1,050	158	70
6	73	50	1,050	695	795	1,850	605	1,050	1,850	795	120	56
7	59	50	845	420	1,170	2,850	605	795	1,290	650	110	54
8	50	47	695	330	540	5,420	605	695	895	560	110	54
9	50	45	560	285	460	2,610	520	520	745	995	105	56
10	63	77	480	270	420	2,060	500	480	695	500	89	54
11	59	86	460	240	400	2,060	420	440	650	420	82	50
12	54	86	440	240	650	1,920	650	400	745	400	75	158
13	50	82	480	260	695	1,430	520	365	440	330	68	101
14	54	91	365	280	560	1,300	560	348	382	285	89	73
15	43	82	300	280	520	1,200	1,640	480	348	255	91	59
16	32	68	270	240	365	1,000	1,170	400	315	240	82	52
17	32	96	300	220	320	850	995	315	285	240	98	45
18	47	105	845	228	400	745	995	560	2,210	240	84	41
19	52	105	795	285	650	695	845	1,640	895	228	130	59
20	54	198	605	315	895	1,230	695	1,710	560	215	86	50
21	82	270	560	440	1,640	1,050	605	1,110	520	200	54	41
22	63	190	400	605	1,640	845	540	895	500	170	54	38
23	50	145	420	460	2,610	745	480	695	382	158	54	32
24	45	125	520	315	3,210	695	440	605	315	186	56	27
25	50	142	650	270	1,710	650	400	520	270	178	70	27
26	50	140	540	270	1,430	560	365	605	270	152	82	27
27	52	160	440	215	1,780	540	365	460	240	150	75	23
28	47	2,130	348	208	1,500	695	315	382	240	160	77	27
29	50	3,480	330	220	-------	605	285	348	240	158	77	41
30	54	1,710	300	240	-------	520	270	315	560	115	66	38
31	30	-------	280	220	-------	605	-------	270	-------	115	68	-------

Note.—Discharge Dec. 30 to Jan. 3, Jan. 13-17, Jan. 29 to Feb. 2 and Feb. 17 and 18 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Schuylkill River at Reading. Discharge Mar. 14-17 estimated, because of no gage height record, from discharge of Little Swatara Creek near Pine Grove.

Monthly discharge of Swatara Creek at Harpers, for the year ending Sept. 30, 1922
(Drainage area 334 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	96	30	54.4	0.163	0.19
November	3,480	45	346	1.04	1.16
December	4,320	270	765	2.29	2.64
January	695	208	317	.949	1.09
February	3,210	220	1,090	3.26	3.40
March	5,420	520	1,290	3.86	4.45
April	1,640	270	646	1.93	2.15
May	1,710	240	614	1.84	2.12
June	2,210	240	717	2.15	2.40
July	2,450	115	518	1.55	1.79
August	200	54	96.1	.288	.33
September	158	23	53.7	.161	.18
The Year	5,420	23	540	1.62	21.90

SUSQUEHANNA BASIN—STATION NO. 37

CODORUS CREEK AT YORK

Location.—At three-span steel highway bridge, South Penn Street, York, York County.

Drainage Area.—221 square miles.
Records Available.—October 7, 1915, to September 30, 1922.
Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by Thomas F. Heberly. Elevation of gage zero 351.79 feet, United States Geological Survey datum.
Discharge Measurements.—Made from downstream side of bridge.
Channel and Control.—Banks are high and not subject to overflow. Bed is composed of mud and gravel. The Loucks Mill Dam, located about one and one half miles below gage, is control for medium, high and probably low stages when the water surface at dam is not below the crest elevation. During low stages, when the water surface is below the crest of dam, the station control is probably at a riffle about 800 feet below the gage. Stage-discharge relation variable during low stages on account of operations at Loucks Mill.
Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 8.2 at 8 a. m. February 3; minimum, 0.52 foot at 5 p. m. September 28.
Ice.—Stage-discharge relation rarely affected by ice.

The following discharge measurement was made by H. J. McIntyre: No. 28, Sept. 8: Gage height, 0.70 foot; discharge, 22.3 second-feet.

Daily Mean Gage Height, in feet, of Codorus Creek at York, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.02	0.90	1.78	2.15	1.78	1.80	2.90	1.36	1.75	2.05	1.23	1.03
2	1.02	.86	2.00	2.35	3.10	1.72	2.55	1.61	2.05	2.45	1.27	1.02
3	1.01	.90	2.96	2.28	5.58	1.72	2.20	1.71	2.12	2.70	1.31	1.08
4	.95	.82	2.30	2.38	2.77	1.75	2.28	1.76	3.02	2.45	1.71	1.01
5	.98	.78	1.90	2.12	2.25	-------	2.15	1.82	2.22	1.94	1.32	1.01
6	.98	.84	1.65	2.00	2.05	-------	2.10	1.78	2.02	1.91	1.30	1.07
7	1.02	.91	1.55	2.05	2.00	4.78	2.15	1.75	2.20	1.80	1.24	.96
8	1.02	.98	1.85	2.02	1.95	5.20	2.12	1.72	1.78	1.61	1.05	.82
9	1.00	1.04	1.90	2.12	1.75	3.40	2.08	1.68	1.77	1.71	.97	.78
10	.96	.99	1.66	2.22	1.78	3.13	1.95	1.71	1.71	1.63	1.00	1.05
11	.94	1.06	1.45	2.18	1.65	4.68	1.80	1.70	1.69	1.61	.97	.86
12	.98	1.01	1.42	2.08	1.65	4.00	1.66	1.66	1.61	1.61	1.11	.77
13	1.01	1.14	1.52	2.06	1.56	3.40	1.60	1.65	1.59	1.59	1.12	.76
14	.99	1.14	1.70	2.22	1.62	3.36	1.71	1.79	1.65	1.56	1.22	.73
15	.98	1.22	1.88	2.05	1.55	4.10	2.05	1.87	1.63	1.61	1.36	.76
16	.94	1.08	1.98	1.92	1.56	4.00	1.76	1.81	1.69	1.62	1.23	.75
17	.94	1.32	1.75	2.08	1.55	3.75	1.78	1.92	1.67	1.56	1.20	.78
18	1.01	1.15	1.72	2.89	1.48	3.10	1.88	2.18	1.71	1.65	1.05	.71
19	.93	1.20	1.76	3.93	2.05	3.26	1.81	2.50	1.68	2.40	1.00	.75
20	.89	1.26	1.98	2.60	5.38	4.96	1.74	2.26	1.60	2.15	1.23	.73
21	.84	1.32	1.88	2.15	4.65	3.15	1.70	2.26	1.43	1.99	1.16	.71
22	.79	1.28	2.08	1.98	2.82	2.60	1.61	2.05	1.48	1.83	1.08	.66
23	.71	1.15	1.95	1.88	3.37	2.38	1.50	1.70	1.45	1.68	1.10	.56
24	.66	1.72	2.00	1.82	3.40	1.88	1.54	1.72	1.44	1.91	1.03	.66
25	.74	1.62	1.95	1.90	2.30	1.95	1.50	1.72	1.42	1.67	1.00	.71
26	.62	1.82	1.88	1.88	1.78	2.05	1.44	1.73	1.41	1.65	1.11	.59
27	.57	1.95	1.79	1.85	1.72	2.15	1.40	1.74	1.44	1.53	1.00	.57
28	.78	3.59	2.15	1.78	1.82	1.75	1.43	1.74	1.52	1.67	1.04	.55
29	.92	2.78	2.02	1.85	-------	1.72	1.38	1.71	2.63	1.69	.99	.55
30	.86	2.15	1.78	1.90	-------	1.78	1.30	1.63	2.00	1.61	1.05	.70
31	.82	-------	1.62	1.92	-------	2.12	-------	1.69	-------	1.42	1.02	-------

Note.—Gage height Mar. 5 and 6 not observed.

OHIO BASIN

ALLEGHENY RIVER NEAR LARABEE

Location.—At single-span steel highway bridge on road to Corryville, about one mile south of Pennsylvania Railroad station at Larabee, McKean County.

Drainage Area.—545 square miles.

Records Available.—June 29, 1915, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read to hundredths twice daily by Miss Gladys Leet.

Discharge Measurements.—Made from upstream side of bridge or by wading; during extremely high stages from railroad bridge about 200 feet downstream from gage.

Channel and Control.—The right bank is high and not subject to overflow. At a gage height of about 4 feet the river begins to overflow the left bank above the bridge into a broad flat, where a part of the stream flow remains in storage until the river recedes. Bed is composed of gravel, stones and boulders. Low-water control is the upper sill of an old timber dam about 60 feet downstream from the gage. The timber abutments are vertical and have the effect of a weir at low stages.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 11.4 feet at midnight April 1-2; minimum, 0.66 foot at 8.30 a. m. September 10.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Discharge measurements of Allegheny River near Larabee, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
18	June 6	J. M. Snavely	4.48	887
19	Sept. 30	H. J. McIntyre	.81	64.6

Daily Mean Gage Height, in feet, of Allegheny River near Larabee, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.74	-------	7.96	3.60	2.22	4.72	10.75	2.82	1.62	6.69	0.94	0.89
2	2.85	-------	7.00	3.28	3.82	3.95	10.80	2.59	1.92	5.56	1.12	.86
3	2.56	9.70	6.28	3.22	5.48	3.60	9.60	2.52	4.69	6.78	1.23	.95
4	2.82	8.10	6.09	3.58	4.19	3.25	8.70	3.25	5.12	7.73	1.31	1.38
5	2.85	7.00	5.60	7.98	3.60	3.38	8.52	3.18	4.35	6.03	1.04	1.41
6	2.48	6.11	5.32	9.17	3.51	3.67	7.95	3.18	4.42	4.88	.94	.99
7	2.24	5.44	4.85	7.04	3.32	6.98	7.50	3.32	4.52	4.11	.95	.91
8	2.25	5.04	4.29	5.40	3.04	10.08	7.08	3.40	3.59	3.48	1.07	.89
9	2.64	4.72	4.05	5.45	2.74	8.55	6.58	3.00	3.19	2.99	1.08	.73
10	3.40	6.65	3.74	5.48	2.80	7.13	6.60	2.92	3.87	2.58	1.04	.75
11	3.25	6.52	-------	4.85	3.30	7.89	6.92	2.85	5.46	2.23	1.01	1.13
12	3.42	6.24	-------	3.59	4.42	9.10	7.68	2.80	7.72	1.96	.95	4.07
13	2.80	5.81	-------	4.36	3.68	8.95	7.72	2.52	6.36	2.06	.85	1.98
14	2.42	5.72	-------	4.07	2.79	9.18	7.53	2.42	5.49	1.81	.79	1.45
15	2.25	6.35	2.80	3.55	2.95	9.15	9.42	2.38	4.76	1.64	.76	1.20
16	-------	5.70	2.66	3.38	2.62	8.40	9.68	2.19	3.97	1.51	.76	.99
17	2.11	5.95	2.54	2.87	2.20	7.12	8.95	2.00	3.74	1.43	.76	.97
18	2.10	8.91	6.40	3.42	2.25	6.12	10.20	2.12	4.02	1.42	.74	.94
19	2.35	10.05	6.12	3.62	2.57	5.52	10.50	2.90	2.99	1.42	.95	.90
20	3.39	10.15	5.31	4.28	6.34	5.08	9.85	-------	2.64	1.30	.99	.88
21	3.60	9.62	5.24	3.66	6.76	4.80	8.70	3.60	2.51	1.18	.80	.86
22	3.30	8.42	3.94	3.39	6.80	4.28	7.20	3.45	2.80	1.11	.82	.86
23	3.14	7.22	6.33	2.66	9.25	3.70	6.28	3.10	2.40	1.09	.80	.87
24	2.86	7.02	6.85	2.61	9.98	3.88	5.72	2.75	2.02	.99	.95	.83
25	2.60	7.25	6.03	2.48	8.31	3.82	4.85	2.95	1.77	.98	1.96	.81
26	2.42	6.39	5.43	2.30	6.51	4.05	4.40	3.28	1.61	1.02	2.10	.81
27	2.31	7.25	5.00	2.20	5.78	5.03	4.10	2.55	1.57	.98	1.27	.78
28	-------	8.98	4.78	2.22	5.18	8.46	3.60	2.28	3.10	.95	1.03	.80
29	2.08	9.32	4.72	2.35	-------	9.75	3.28	2.05	7.99	.88	.97	.79
30	1.99	8.95	4.39	2.38	-------	9.80	3.02	1.95	7.46	.85	.89	.74
31	-------	-------	3.98	2.22	-------	10.00	-------	1.75	-------	.87	.90	-------

Note.—Gage height Oct. 16, 28, 31, Nov. 1, 2, Dec. 11-14 not observed; May 20 unsatisfactory. Stage-discharge relation Dec. 21 to Feb. 22 affected by ice.

OHIO BASIN—STATION NO. 2

BROKENSTRAW CREEK AT YOUNGSVILLE

Location.—At single-span steel highway bridge, Youngsville, Warren County.

Drainage Area.—290 square miles.

Records Available.—October 22, 1909, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by William L. York. Elevation of gage zero 1,188.92 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of silt, clay and gravel. Control is at the first of a series of riffles extending from 300 to 500 feet below gage; may shift occasionally.

Extremes of Discharge.—Maximum stage during the year, 5.60 feet observed at 8.45 a. m. November 2 (discharge, 4,080 second-feet); minimum, —0.38 foot on September 26, 27 and 28 (discharge, 32 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 50 and 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Brokenstraw Creek at Youngsville, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
40	Apr. 13	C. B. McElrath	3.09	1,690
41	July 19	H. L. Landis	.56	216
42	Aug. 28a	C. B. McElrath	— .09	72.1
43	28	do	— .09	73.8

a Measurement made by wading 300 feet above gage.

Daily Mean Gage Height, in feet, of Brokenstraw Creek at Youngsville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.48	2.03	1.55	0.62	1.05	0.85	4.20	0.66	0.39	1.00	—0.08	—0.26
2	.34	5.37	1.40	.54	1.68	.88	2.96	.60	.36	.64	— .02	— .25
3	.18	4.71	1.95	.66	1.58	.78	2.02	.58	.39	1.05	— .08	— .24
4	.33	3.45	1.80	1.16	1.18	.70	1.88	.98	.28	.64	— .10	.17
5	1.20	2.70	1.48	4.47	1.00	.75	1.75	.92	.21	.42	— .10	— .10
6	1.06	2.50	1.29	4.26	.96	.95	1.51	.75	.20	.28	— .12	— .21
7	.62	1.88	1.18	3.00	.96	3.45	1.30	1.10	.18	.22	— .16	— .26
8	.74	1.55	1.12	1.78	.90	3.38	1.28	.94	.10	.18	.00	— .26
9	1.64	1.35	1.04	1.48	.81	2.43	1.18	.80	.10	.17	— .09	— .29
10	1.32	1.56	.98	1.18	.74	2.10	1.17	.75	.27	.05	— .12	— .30
11	1.09	2.02	.94	1.05	1.18	3.83	2.13	.68	.89	.06	— .18	— .18
12	2.23	1.82	1.08	.80	2.12	4.49	3.06	.60	1.25	.04	— .20	— .01
13	3.17	1.50	1.18	.74	1.86	3.60	3.18	.49	.89	.08	— .21	— .11
14	2.56	1.40	1.02	.68	1.48	2.62	2.75	.54	.52	.00	— .23	— .15
15	1.52	1.75	.78	.74	1.18	2.18	4.13	.92	.34	— .02	— .23	— .21
16	1.02	1.74	.75	.62	.88	1.82	3.59	.65	.25	— .02	— .26	— .25
17	.77	2.75	1.13	.60	.64	1.42	2.48	.58	.36	— .10	— .29	-------
18	.66	4.05	3.64	.70	.62	1.18	2.42	.60	.28	.24	— .29	— .30
19	.58	4.45	3.42	1.06	.93	1.00	2.08	.78	.17	.56	— .26	— .28
20	.64	4.05	2.45	1.18	1.95	1.04	2.00	1.18	.14	.31	— .30	— .29
21	.74	3.00	1.72	1.08	2.19	1.01	1.86	1.65	.11	.14	— .32	— .29
22	.74	2.16	1.35	.90	2.41	.90	1.54	1.28	.06	.03	— .34	— .31
23	.62	1.62	1.18	.74	2.86	.84	1.40	.98	.04	.00	— .32	— .32
24	.50	2.00	1.20	1.45	3.40	1.12	1.14	.75	— .02	— .01	.00	— .32
25	.44	2.70	1.05	2.26	2.45	1.42	1.05	1.30	.02	— .03	— .10	— .34
26	.32	2.60	.94	1.85	1.40	1.81	1.00	1.74	— .06	— .09	— .02	— .38
27	.24	2.22	.90	1.60	1.32	2.15	.95	1.16	.15	— .10	— .10	— .36
28	.19	3.02	.88	1.48	1.18	3.30	.85	.76	.77	— .09	— .04	— .36
29	.12	2.60	.88	1.41	-------	3.60	.77	.58	1.22	— .10	— .16	— .34
30	.10	2.00	.52	1.18	-------	3.25	.70	.50	1.36	— .20	— .20	— .35
31	.18	-------	.62	1.16	-------	4.25	-------	.44	-------	— .21	— .22	-------

Note.—Stage-discharge relation Dec. 26 to Jan. 4, Jan. 12-18, Jan. 22 to Feb. 22 and Mar. 2-6 affected by ice. Gage height Sept. 17 not observed.

Daily discharge, in second-feet, of Brokenstraw Creek at Youngsville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	224	920	695	180	220	358	2,600	282	197	418	74	45
2	182	3,850	595	180	360	300	1,580	265	188	282	86	47
3	135	3,100	920	200	550	240	920	265	197	438	74	48
4	179	1,900	800	340	480	220	860	418	164	282	70	133
5	500	1,370	645	2,900	400	220	800	378	143	206	70	70
6	438	1,230	545	2,700	340	320	645	319	140	164	67	52
7	265	860	500	1,580	280	1,900	545	458	135	146	60	45
8	319	695	458	800	220	1,900	545	398	115	135	90	45
9	695	570	438	645	200	1,160	500	338	115	133	72	41
10	545	695	418	500	220	980	479	319	161	102	67	40
11	458	920	398	438	380	2,240	980	300	378	105	56	56
12	1,040	800	458	320	750	2,900	1,660	265	522	100	53	88
13	1,740	645	500	240	650	2,060	1,740	227	378	110	52	68
14	1,300	595	418	220	500	1,300	1,440	248	230	90	49	62
15	645	800	338	200	400	1,040	2,510	378	182	86	49	52
16	418	745	319	180	280	800	2,060	282	155	86	45	47
17	319	1,440	479	200	220	595	1,230	265	188	70	41	44
18	282	2,420	2,060	220	220	500	1,160	265	164	152	41	40
19	265	2,800	1,900	438	260	418	980	338	133	248	45	43
20	282	2,420	1,160	500	420	438	920	500	125	173	40	41
21	319	1,580	745	458	750	418	860	695	117	125	38	41
22	319	1,040	570	340	1,100	378	645	545	105	98	36	39
23	265	695	500	240	1,510	358	595	418	100	90	38	55
24	230	920	500	220	1,900	458	479	319	86	88	90	38
25	212	1,370	438	200	1,160	595	438	545	95	84	70	36
26	176	1,300	360	180	595	800	418	745	78	72	86	52
27	152	1,040	300	180	545	1,040	398	479	127	70	70	34
28	137	1,580	240	180	500	1,820	358	319	319	72	82	34
29	120	1,300	220	180	-------	2,060	319	265	500	70	60	36
30	115	920	200	200	-------	1,740	300	230	570	53	53	35
31	135	-------	180	200	-------	2,600	-------	212	-------	52	50	-------

Note.—Discharge Dec. 26 to Jan. 4, Jan. 12-18, Jan. 22 to Feb. 22 and Mar. 2-6 estimated, because of ice, and Sept. 17, estimated, because of no gage height record, from weather records, study of gage height graph and comparison with similar studies for French Creek at Kimmeytown and Saegertown and Oil Creek near Rouseville.

Monthly discharge of Brokenstraw Creek at Youngsville, for the year ending Sept. 30, 1922

(Drainage area 290 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,740	115	400	1.38	1.59
November	3,850	570	1,350	4.66	5.20
December	2,060	180	590	2.03	2.34
January	2,900	180	502	1.73	1.99
February	1,900	200	550	1.90	1.98
March	2,900	220	1,040	3.59	4.14
April	2,600	300	965	3.33	3.72
May	745	212	364	1.26	1.45
June	570	78	204	.703	.78
July	438	52	142	.490	.56
August	90	36	60.5	.209	.24
September	183	32	49.0	.169	.19
The year	3,850	32	516	1.78	24.18

OHIO BASIN—STATION NO. 3

TIONESTA CREEK AT BUTLER BRIDGE

Location.—At three-span steel highway bridge, known as Butler Bridge, about two miles above Nebraska, Forest County.

Drainage Area.—420 square miles.

Records Available.—July 26, 1912, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Mrs. P. S. Moore.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left begins to overflow at a stage of about 12.6 feet. Bed is composed of gravel and boulders. Control is at a riffle composed of gravel, at the upstream end of an island about 500 feet below gage; probably permanent.

Extremes of Discharge.—Maximum open-water stage during the year, 8.0 feet estimated from hydrograph, 8 a. m. April 1 (discharge, 4,860 second-feet); a stage of 8.15 feet was reached at 1 p. m. March 5, but the water was held back by an ice jam; minimum, 2.94 feet at 5 p. m. July 26, 1 p. m. July 31 and 5 p. m. September 23 (discharge, 25 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 1,000 second-feet and fairly well defined between 1,000 and 5,000 second-feet. Gage read once daily to half tenths October 1 to July 20 and to hundredths since that date. Daily discharge ascertained by applying daily mean gage height, computed from a continuous daily hydrograph obtained by plotting gage heights, to rating table. Results good.

Discharge measurements of Tionesta Creek at Butler Bridge, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
22	Apr. 14	C. B. McElrath	5.61	1,580
23	July 20	H. L. Landis	3.53	130

Daily Mean Gage Height, in feet, of Tionesta Creek at Butler Bridge, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.95	4.76	5.35	5.96	5.85	4.56	7.71	4.22	4.00	3.47	3.14	3.31
2	3.80	7.09	5.21	6.35	5.94	6.35	6.71	4.18	4.03	3.52	3.40	3.37
3	3.75	6.20	5.27	6.55	6.00	7.70	6.12	4.18	4.10	3.63	3.88	3.45
4	3.70	5.14	5.22	6.69	6.08	7.81	5.86	4.20	3.99	3.72	3.81	3.52
5	3.90	5.20	5.05	6.85	5.92	7.71	5.53	4.28	3.82	3.67	3.54	3.52
6	4.00	5.00	4.66	5.85	5.72	4.96	5.21	4.34	3.82	3.53	3.41	3.43
7	3.85	4.85	4.67	4.99	5.61	5.91	5.05	4.61	3.82	3.48	3.63	3.29
8	3.80	4.80	4.59	4.60	5.51	6.74	5.02	4.57	3.85	3.48	4.33	3.23
9	3.80	4.75	4.51	4.59	5.43	5.86	5.02	4.34	3.90	3.48	3.81	3.23
10	4.00	5.37	4.25	4.51	5.44	5.50	5.02	4.15	4.52	3.47	3.57	3.27
11	3.85	4.92	4.20	4.42	5.56	6.56	5.57	4.02	5.33	3.42	3.50	3.31
12	3.93	5.01	4.20	5.17	5.83	6.67	6.05	3.97	5.47	3.38	3.43	3.34
13	4.47	5.00	4.20	7.15	6.04	6.04	5.89	3.92	4.83	3.33	3.40	3.33
14	4.48	4.80	4.20	7.57	5.91	5.83	5.92	3.90	4.30	3.27	3.38	3.31
15	4.17	5.00	4.05	7.49	5.62	5.56	6.33	3.93	4.12	3.18	3.33	3.17
16	4.03	4.75	3.93	7.26	5.37	5.48	6.06	3.95	4.06	3.08	3.31	3.06
17	3.90	5.51	3.96	6.69	5.16	5.22	5.93	3.97	4.39	3.03	3.31	2.98
18	3.90	7.03	5.39	6.90	5.17	5.03	6.61	3.98	4.46	3.48	3.35	2.99
19	4.00	6.73	5.51	7.29	5.52	4.90	6.33	4.40	4.20	3.48	3.36	3.04
20	4.10	6.66	4.92	7.21	6.15	4.83	5.90	4.93	4.02	3.43	3.35	3.07
21	4.20	6.26	4.94	6.84	6.23	4.74	5.67	4.87	3.88	3.37	3.29	3.07
22	4.10	5.65	4.92	6.69	6.04	4.65	5.37	4.72	3.82	3.33	3.31	3.01
23	4.00	5.27	4.98	6.33	6.41	4.60	5.15	4.65	3.77	3.28	3.45	3.01
24	3.90	5.22	4.92	6.14	6.61	4.58	4.95	4.63	3.73	3.25	3.67	3.05
25	3.90	5.15	4.86	6.22	6.27	4.61	4.81	4.67	3.67	3.20	3.91	3.10
26	3.85	5.11	4.56	6.24	5.93	4.60	4.66	4.67	3.62	3.02	3.93	3.10
27	3.80	5.66	4.27	6.21	5.85	4.88	4.59	4.61	3.52	3.04	3.80	3.13
28	3.75	6.26	4.20	6.15	4.99	5.75	4.47	4.20	3.55	3.11	3.57	3.17
29	3.75	6.02	4.18	6.04	-------	6.16	4.27	3.98	3.53	3.07	3.39	3.20
30	3.75	5.58	3.87	5.89	-------	6.62	4.23	3.97	3.57	3.01	3.28	3.20
31	3.82	-------	4.62	5.85	-------	6.68	-------	4.00	-------	2.95	3.26	-------

Note.—Stage-discharge relation Dec. 28 to Jan. 4 and Jan. 8 to Mar. 6 affected by ice.

Daily discharge, in second-feet, of Tionesta Creek at Butler Bridge, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	285	780	1,340	200	260	500	4,440	405	305	122	49	82
2	225	3,600	1,180	220	360	400	3,040	405	330	136	103	96
3	208	2,360	1,230	280	650	300	2,230	405	355	169	257	117
4	190	1,130	1,180	600	800	280	1,970	405	305	197	229	136
5	265	1,180	1,040	3,180	650	280	1,500	460	233	181	142	136
6	305	990	700	1,850	500	650	1,180	490	233	139	106	111
7	245	860	700	990	400	1,970	1,040	660	233	125	169	78
8	225	820	660	600	300	3,040	990	625	245	125	490	66
9	225	780	590	500	280	1,970	990	490	265	125	229	66
10	305	1,340	433	460	340	1,500	990	380	590	122	151	74
11	245	900	405	440	550	2,900	1,610	305	1,340	108	130	82
12	277	990	405	380	1,000	3,040	2,100	293	1,440	98	111	90
13	555	990	405	360	900	2,100	1,970	273	860	87	103	87
14	590	820	405	340	650	1,850	1,970	265	460	74	98	82
15	380	990	330	280	500	1,610	2,490	277	355	56	87	55
16	330	780	277	260	360	1,500	2,230	285	330	40	82	37
17	265	1,500	289	260	260	1,180	1,970	293	520	34	82	28
18	265	3,460	1,390	340	240	1,040	2,900	297	555	125	92	29
19	305	3,040	1,500	550	340	900	2,490	520	405	125	94	35
20	355	3,040	900	700	500	860	1,970	945	305	111	92	38
21	405	2,490	945	650	850	780	1,730	860	257	96	78	38
22	355	1,610	900	500	1,300	700	1,340	740	233	87	82	31
23	305	1,230	990	400	1,600	660	1,130	700	214	76	117	31
24	265	1,180	900	300	1,500	660	945	700	200	70	181	36
25	265	1,130	860	260	1,100	660	820	700	181	60	269	42
26	245	1,080	625	240	800	660	700	700	166	32	279	42
27	225	1,730	433	220	650	900	660	660	136	35	225	47
28	208	2,490	360	220	500	1,850	555	405	145	44	151	55
29	208	2,100	280	220	-------	2,360	433	297	139	38	101	60
30	208	1,610	240	220	-------	2,900	433	293	151	31	76	60
31	233	-------	200	220	-------	3,040	-------	305	-------	26	72	-------

Note.—Discharge Dec. 28 to Jan. 4 and Jan. 8 to Mar. 6, estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Clarion River near Clarion, Brokenstraw Creek at Youngsville and Oil Creek near Rouseville.

Monthly discharge of Tionesta Creek at Butler Bridge, for the year ending Sept. 30, 1922

(Drainage area 420 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	590	190	289	0.688	0.79
November	3,600	780	1,570	3.74	4.17
December	1,500	200	713	1.70	1.96
January	3,180	200	524	1.25	1.44
February	1,600	240	648	1.54	1.60
March	3,040	280	1,390	3.31	3.82
April	4,440	433	1,630	3.88	4.33
May	945	265	479	1.14	1.31
June	1,440	136	383	.912	1.02
July	197	26	93.4	.222	.26
August	490	49	146	.348	.40
September	136	28	65.6	.156	.17
The Year	4,440	26	658	1.57	21.27

OHIO BASIN—STATION NO. 4

OIL CREEK NEAR ROUSEVILLE

Location.—At two-span steel highway bridge, one half mile below Rouseville, Venango County.

Drainage Area.—330 square miles.

Records Available.—October 20, 1909, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Mrs. Lenna Copeland.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right begins to overflow at a stage of about 9.2 feet. Bed is composed of gravel and boulders. Control is at the first of a series of riffles extending from 250 to 450 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 4.6 feet observed at 9.40 a. m. November 2 (discharge, 5,560 second-feet); minimum, 0.60 foot September 27 to 30 (discharge, 40 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 50 and 10,000 second-feet. Gage read twice daily to quarter tenths October 1 to July 22 and to hundredths since that date. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Oil Creek near Rouseville, during the year ending Sep. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
41	Jan. 6	C. B. McElrath	2.87	1,560
42	July 22	H. L. Landis	.76	59.4
43	Aug. 29	C. B. McElrath	.73	68.7

Daily Mean Gage Height, in feet, of Oil Creek near Rouseville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.91	2.28	1.89	1.32	1.12	1.28	3.28	1.28	1.13	1.03	1.07	0.70
2	.90	4.34	1.80	1.40	1.60	1.46	2.58	1.28	1.10	1.08	1.03	.72
3	.90	3.15	2.25	1.45	1.87	1.26	2.23	1.26	1.08	1.17	.88	.75
4	1.00	2.25	1.95	1.66	1.56	1.28	2.30	1.53	1.06	1.13	.84	1.52
5	1.00	2.08	1.80	3.65	1.40	1.28	2.10	1.53	1.02	1.02	.81	1.07
6	1.00	1.95	1.71	2.95	1.46	1.37	1.96	1.38	1.00	.96	.79	.83
7	1.00	1.80	1.61	2.08	1.48	3.24	1.82	1.53	.98	.90	.80	.76
8	1.06	1.72	1.56	1.63	1.34	-------	1.84	1.49	.98	.87	.92	.74
9	1.55	1.62	1.50	1.68	1.28	2.31	1.78	1.38	1.00	.86	.86	.72
10	1.42	2.00	1.50	1.69	1.33	2.24	1.83	1.33	1.22	.82	.81	.69
11	1.28	2.02	1.50	1.56	1.60	3.55	2.80	1.29	1.63	.78	.76	.69
12	1.63	1.92	1.62	1.46	2.41	3.49	3.18	1.28	2.09	.78	.76	.76
13	2.71	1.78	1.70	1.40	1.88	2.56	2.73	1.18	1.43	.88	.74	.73
14	1.88	1.70	1.60	1.38	1.60	2.40	2.45	1.18	1.22	.83	.71	.70
15	1.52	1.95	1.48	1.42	1.60	2.32	3.58	1.18	1.08	.78	.70	.68
16	1.35	1.85	1.38	1.28	1.30	2.03	2.86	1.18	1.03	.78	.70	.68
17	1.20	2.90	1.83	1.10	1.20	1.84	2.43	1.18	1.06	.78	.70	.67
18	1.10	3.45	3.17	1.32	1.20	1.66	2.76	1.18	1.07	.98	.70	.65
19	1.10	3.40	2.65	1.50	1.47	1.66	2.33	1.38	.99	.96	.74	.64
20	1.15	3.00	2.15	1.70	2.30	1.60	2.33	1.74	.98	.86	.72	.65
21	1.20	2.38	1.98	1.66	2.20	1.58	2.08	1.98	.94	.78	.69	.64
22	1.20	2.09	1.55	1.48	2.06	1.58	1.90	1.73	.92	.77	.68	.64
23	1.10	1.92	1.71	1.09	2.54	1.38	1.80	1.53	.88	.76	.68	.64
24	1.05	1.95	1.80	1.24	2.38	1.60	1.70	1.43	.88	.74	.66	.64
25	1.00	2.30	1.70	1.20	1.80	1.88	1.68	1.53	.88	.74	.79	.62
26	.95	2.00	1.50	1.26	1.58	2.06	1.59	1.86	.88	.73	.82	.62
27	.90	2.08	1.51	1.26	1.66	2.27	1.53	1.53	.88	.72	.75	.60
28	.90	2.80	1.44	1.20	1.58	3.25	1.46	1.36	.98	.96	.72	.60
29	.90	2.35	1.40	1.18	-------	3.16	1.38	1.28	1.18	.85	.72	.60
30	.90	2.08	1.18	1.08	-------	3.00	1.36	1.20	1.07	.85	.72	.60
31	.90	-------	1.42	1.08	-------	3.61	-------	1.17	-------	.76	.70	-------

Note.—Stage-discharge relation Dec. 31 to Jan. 3 affected by ice. Gage height Mar. 8 not observed.

Daily discharge, in second-feet, of Oil Creek near Rouseville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93	1,110	650	170	157	217	2,770	217	160	128	140	54
2	90	4,870	560	170	405	311	1,550	217	150	144	128	57
3	90	2,580	1,040	180	605	209	1,040	209	144	174	86	62
4	118	1,040	700	442	370	217	1,110	370	137	160	78	335
5	118	860	560	3,370	275	217	860	370	124	124	72	140
6	118	700	480	2,120	311	260	700	265	118	107	68	76
7	118	560	405	860	323	2,580	560	370	112	90	70	64
8	137	480	370	442	245	2,200	605	329	112	84	96	60
9	370	405	335	480	217	1,110	560	265	118	82	82	57
10	287	750	335	405	240	1,040	605	240	193	74	72	53
11	217	750	335	370	405	3,370	1,870	221	442	67	64	53
12	442	650	405	311	1,250	3,170	2,580	217	860	67	64	64
13	1,710	560	480	275	650	1,480	1,790	178	298	86	60	59
14	650	480	405	265	405	1,250	1,320	178	193	76	56	54
15	335	700	323	287	405	1,110	3,370	178	144	67	54	51
16	250	605	265	217	225	805	1,960	178	128	67	54	51
17	185	2,040	605	150	185	605	1,320	178	137	67	54	50
18	150	2,970	2,580	235	185	442	1,790	178	140	112	54	47
19	150	2,970	1,630	335	317	442	1,180	265	115	107	60	46
20	168	2,210	920	480	1,110	405	1,180	520	112	82	57	47
21	185	1,250	750	442	980	405	860	750	101	67	53	46
22	185	860	370	323	805	405	650	520	96	65	51	46
23	150	650	480	147	1,480	265	560	370	86	64	51	46
24	134	700	560	201	1,250	405	480	293	86	60	48	46
25	118	1,110	480	185	560	650	480	370	86	60	68	43
26	104	750	335	209	405	805	405	605	86	59	74	43
27	90	860	335	209	442	1,040	370	370	86	57	62	40
28	90	1,870	299	185	405	2,580	311	255	112	107	57	40
29	90	1,180	275	178	-------	2,580	265	217	178	80	57	40
30	90	860	178	144	-------	2,210	255	185	140	80	57	40
31	90	-------	150	144	-------	3,370	-------	174	-------	64	54	-------

Note.—Discharge Dec. 31 to Jan. 3 estimated, because of ice, and Mar. 8, estimated, because of no gage height record, from weather records, study of gage height graph and comparison with similar studies for Brokenstraw Creek at Youngsville and French Creek at Saegertown.

Monthly discharge of Oil Creek near Rouseville, for the year ending Sept. 30, 1922

(Drainage area 330 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,710	90	230	0.697	0.80
November	4,870	405	1,250	3.79	4.23
December	2,580	150	568	1.72	1.98
January	3,370	144	449	1.36	1.57
February	1,480	157	522	1.58	1.64
March	3,370	209	1,170	3.55	4.09
April	3,370	255	1,110	3.36	3.75
May	750	174	298	.903	1.04
June	750	86	166	.503	.56
July	174	57	88.0	.267	.31
August	140	48	67.8	.205	.24
September	335	40	63.7	.193	.22
The year	4,870	40	496	1.50	20.43

OHIO BASIN—STATION NO. 5

FRENCH CREEK AT KIMMEYTOWN

Location.—At single-span steel highway bridge, Kimmeytown, Erie County, about 4 miles upstream from the mouth of South Branch French Creek and about 5 miles north of Union City.

Drainage Area.—207 square miles.

Records Available.—May 16, 1910, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Mrs. J. L. Carter. Elevation of gage zero 1,235.7 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank begins to overflow at a stage of 8.2 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control for low water is the first of a series of riffles extending from 10 to 60 feet below gage; probably shifts occasionally.

Extremes of Discharge.—Maximum open-water stage during the year, estimated from hydrograph, 6.5 feet at 6 p.m. November 18 (discharge, 3,230 second-feet); a stage of 7.60 feet was observed at 3.35 p. m. January 5, but the water was held back by an ice jam; minimum, 0.52 foot at 2.15 p. m. September 23 and 3.50 p. m. September 25 (discharge, 13 second-feet)

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined to 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of French Creek at Kimmeytown, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
33	Apr. 15	C. B. McElrath	4.57	1,860
34	July 19	H. L. Landis	1.14	99.9

Daily Mean Gage Height, in feet, of French Creek at Kimmeytown, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.28	2.86	2.27	1.73	1.89	1.65	4.68	1.30	0.92	0.94	0.75	0.65
2	1.16	6.03	2.17	2.80	2.90	1.63	3.38	1.22	.91	.85	.76	.68
3	1.04	4.86	2.88	2.61	3.55	1.50	2.80	1.27	.91	.91	.79	.68
4	1.69	3.85	2.58	3.29	2.92	1.44	2.70	1.72	.90	.90	.94	.70
5	2.74	3.52	2.20	6.59	3.01	1.47	2.54	1.75	.96	.82	.87	.62
6	1.89	2.92	2.43	5.20	3.05	1.74	2.20	1.51	.90	.82	.78	.63
7	1.55	2.53	1.94	3.57	3.01	3.43	2.04	1.52	.92	.80	.74	.63
8	2.88	2.35	1.97	2.83	2.85	3.46	1.98	1.52	.91	.78	.76	.66
9	3.78	2.16	1.83	1.96	2.77	2.78	1.99	1.34	.89	.78	.98	.67
10	3.08	3.23	1.83	1.81	2.68	2.86	2.08	1.28	.98	.80	.91	.64
11	2.67	2.57	1.81	1.61	3.56	4.68	2.84	1.20	1.31	.79	.86	.62
12	3.94	2.87	2.10	1.55	4.83	4.87	3.98	1.16	1.59	.82	.75	.73
13	3.68	2.57	2.21	1.65	4.86	3.61	3.99	1.12	1.25	.80	.72	.81
14	2.72	2.45	1.97	1.70	4.34	3.00	3.36	1.09	1.14	.76	.67	.81
15	2.07	2.74	1.61	1.73	3.97	2.83	4.37	1.07	1.04	.74	.65	.75
16	1.50	2.80	1.64	2.25	3.74	2.34	3.84	1.00	.92	.78	.67	.72
17	1.56	4.69	2.86	3.01	3.69	2.02	3.02	.99	.89	.78	.65	.66
18	1.40	6.00	5.00	3.11	3.60	1.81	2.96	1.02	.90	1.06	.68	.66
19	1.35	5.58	4.15	3.40	3.63	1.74	2.52	1.11	.92	1.14	.65	.62
20	1.48	4.37	3.00	3.47	4.90	1.72	2.71	1.25	.85	.92	.64	.61
21	1.74	3.46	2.49	3.30	5.18	1.70	2.69	1.58	.82	.84	.62	.62
22	1.80	2.85	2.10	2.99	4.87	1.45	2.30	1.50	.88	.82	.61	.59
23	1.58	2.30	2.19	2.74	4.71	1.65	2.07	1.25	.82	.75	.57	.58
24	1.40	2.55	1.96	2.50	4.20	1.95	1.84	1.12	.82	.77	.63	.63
25	1.29	3.67	1.90	2.48	2.91	3.10	1.72	1.32	.82	.72	.61	.58
26	1.25	3.18	1.74	2.29	2.22	4.50	1.66	1.78	.82	.70	.80	.61
27	1.15	3.12	1.60	2.09	2.02	4.40	1.60	1.45	.85	.74	.77	.61
28	1.16	3.20	1.69	2.03	1.97	4.83	1.52	1.21	.94	.76	.77	.61
29	1.14	2.90	1.61	1.90	-------	4.21	1.44	1.08	1.00	.70	.70	.59
30	1.09	2.50	1.58	1.85	-------	4.18	1.37	1.00	.90	.66	.66	.60
31	1.14	-------	1.65	1.80	-------	5.78	-------	.99	-------	.71	.66	-------

Note.—Stage-discharge relation Dec. 23, Dec. 28 to Jan. 6 and Jan. 13 to Feb. 23 affected by ice.

Daily discharge, in second-feet, of French Creek at Kimmeytown, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	660	418	140	150	230	1,720	135	58	61	33	22
2	102	2,780	382	140	280	230	895	115	56	48	34	24
3	78	1,860	660	160	440	185	620	128	56	56	39	24
4	245	1,130	540	280	420	170	580	245	55	55	61	26
5	580	950	400	2,000	360	178	505	200	64	43	50	20
6	305	660	488	1,900	280	260	400	185	55	43	37	20
7	200	505	320	1,010	220	895	350	185	58	40	32	20
8	660	452	320	620	180	950	335	185	56	37	34	23
9	1,130	382	290	320	170	620	335	145	54	37	67	24
10	745	790	290	275	200	660	365	130	67	40	56	21
11	580	540	275	215	260	1,720	620	110	138	39	49	20
12	1,190	660	365	200	460	1,800	1,250	102	215	43	33	30
13	1,070	540	400	170	700	1,010	1,250	94	122	40	29	42
14	580	488	320	160	600	700	895	88	98	34	24	42
15	350	580	215	150	360	620	1,510	84	78	32	22	33
16	185	620	230	140	240	452	1,130	70	58	37	24	29
17	200	1,720	660	150	180	335	700	68	54	37	22	23
18	160	2,780	1,930	170	170	275	700	74	55	82	24	23
19	148	2,490	1,370	280	180	260	505	92	58	98	22	20
20	180	1,510	700	380	280	245	580	122	48	58	21	19
21	260	950	505	340	480	245	580	215	43	46	20	20
22	275	620	365	280	700	172	435	185	52	43	19	17
23	215	435	320	240	1,100	230	350	122	43	33	16	17
24	160	540	320	200	1,370	320	290	94	43	36	20	20
25	132	1,070	205	180	660	745	245	140	43	29	19	17
26	122	790	260	160	400	1,580	230	275	43	26	40	19
27	100	745	215	150	335	1,510	215	172	48	32	36	19
28	102	790	180	140	320	1,790	185	112	61	34	36	19
29	98	660	150	140	-------	1,370	170	86	70	26	26	17
30	88	505	140	140	-------	1,370	152	70	55	23	23	18
31	98	-------	140	140	-------	2,600	-------	68	-------	27	23	-------

Note.—Discharge Dec. 23, Dec. 28 to Jan. 6 and Jan. 13. to Feb. 23 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Saegertown and Carlton, Oil Creek near Rouseville and Brokenstraw Creek at Youngsville.

Monthly discharge of French Creek at Kimmeytown, for the year ending Sept. 30, 1922

(Drainage area 207 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,190	78	338	1.63	1.88
November	2,780	382	971	4.69	5.23
December	1,930	140	435	2.10	2.42
January	2,000	140	354	1.71	1.97
February	1,370	150	411	1.99	2.07
March	2,600	170	767	3.71	4.28
April	1,720	152	603	2.91	3.25
May	275	68	134	.647	.75
June	215	43	66.8	.323	.36
July	98	23	42.4	.205	.24
August	67	16	32.0	.155	.18
September	42	17	22.9	.111	.12
The Year	2,780	16	347	1.68	22.75

OHIO BASIN—STATION NO. 6

FRENCH CREEK AT SAEGERTOWN

Location.—At single-span steel highway bridge, at lower end of Saegertown, Crawford County, about one half mile upstream from the mouth of Woodcock Creek.

Drainage Area.—586 square miles.

Records Available.—April 23, 1921, to September 30, 1922. Discharge measurements have been made at the station since August 5, 1915.

Gage.—Standard chain attached to upstream side of bridge; read by Frank L. Peters.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Right bank begins to overflow at a stage of 13 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a riffle, about 700 feet below gage, at the head of an island; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 9.54 feet observed at 7.30 a. m. November 2 (discharge, 6,910 second-feet); minimum, 2.12 feet at 7 a. m. September 30 (discharge, 41 second-feet)

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 2,000 second-feet and fairly well defined between 2,000 and 9,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of French Creek at Saegertown, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
17	Dec. 2	C. B. McElrath	4.19	1,120
18	Feb. 22	do	5.36	2,100
19	Apr. 19	do	5.01	1,770
20	19	do	4.94	1,700
21	July 18	do	2.57	175

Daily Mean Gage Height, in feet, of French Creek at Saegertown, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.58	4.76	4.38	3.20	3.15	3.64	8.34	3.08	2.68	2.94	2.58	2.34
2	2.71	9.23	4.18	3.31	4.39	3.31	6.87	3.04	2.64	2.93	2.78	2.31
3	2.64	9.28	4.86	3.54	4.78	3.27	5.31	2.99	2.62	2.85	2.71	2.29
4	2.71	7.68	4.78	3.95	4.30	3.28	4.96	3.30	2.58	3.03	2.54	2.31
5	3.66	6.00	4.36	7.66	3.94	3.18	4.91	3.52	2.58	2.88	2.49	2.32
6	3.80	5.32	4.11	8.49	3.65	3.61	4.38	3.32	2.62	2.62	2.48	2.29
7	3.35	4.86	3.93	6.96	3.86	6.17	4.12	3.34	2.57	2.55	2.43	2.29
8	2.95	4.56	3.88	4.92	3.70	6.83	4.06	3.38	2.57	2.52	2.50	2.26
9	5.48	4.31	3.82	4.36	3.80	5.43	3.94	3.20	2.59	2.49	2.48	2.24
10	5.16	5.04	3.72	3.93	3.60	5.09	3.98	3.10	2.70	2.47	2.50	2.35
11	4.48	5.60	3.66	3.70	4.57	6.93	4.77	2.97	3.35	2.46	2.52	2.28
12	4.98	5.34	4.04	3.38	6.61	8.11	6.23	2.91	4.00	2.48	2.47	2.38
13	7.06	4.90	4.38	3.40	6.30	7.22	6.42	2.91	3.70	2.50	2.41	2.38
14	6.00	4.68	4.14	3.40	5.31	5.66	6.14	2.80	3.06	2.49	2.33	2.40
15	4.58	4.96	3.84	3.39	4.89	5.22	6.53	2.82	2.82	2.43	2.32	2.36
16	4.00	4.94	3.57	3.30	4.64	4.70	6.73	2.75	2.70	2.40	2.32	2.34
17	3.64	6.31	4.27	3.20	4.80	4.24	5.52	2.72	2.63	2.32	2.34	2.38
18	3.32	7.97	6.60	3.28	4.78	3.82	5.32	2.74	2.58	2.52	2.34	2.30
19	3.21	8.99	7.11	3.60	4.88	3.74	4.96	2.92	2.54	3.01	2.27	2.32
20	3.21	8.49	5.72	4.03	5.96	3.65	4.66	3.20	2.52	2.86	2.25	2.26
21	3.38	6.85	4.80	3.94	6.82	3.64	4.60	3.62	2.48	2.64	2.23	2.30
22	3.48	5.46	4.12	3.76	5.98	3.52	4.35	3.55	2.47	2.52	2.22	2.24
23	3.41	4.80	3.85	3.51	6.61	3.50	3.93	3.22	2.46	2.46	2.27	2.26
24	3.07	4.96	3.92	3.42	6.69	3.92	3.77	2.99	2.42	2.42	2.26	2.22
25	2.95	6.08	3.90	3.57	5.46	4.87	3.60	3.43	2.43	2.46	2.29	2.17
26	2.97	5.48	3.58	3.56	4.41	6.43	3.50	4.35	2.42	2.47	2.30	2.21
27	2.86	5.26	3.54	3.49	4.01	6.88	3.42	3.58	2.47	2.87	2.36	2.18
28	2.80	5.48	3.46	3.46	3.82	7.58	3.32	3.12	2.68	2.76	2.34	2.16
29	2.81	5.29	3.46	3.24	-------	7.70	3.21	2.94	3.59	2.52	2.38	2.20
30	2.78	4.76	3.42	3.32	-------	7.33	3.12	2.75	3.06	2.44	2.36	2.14
31	2.84	-------	3.26	3.22	-------	8.24	-------	2.69	-------	2.44	2.34	-------

Note.—Stage-discharge relation Dec. 27 to Jan. 4, Jan. 13-18 and Jan. 25 to Feb. 22 affected by ice.

Daily discharge, in second-feet, of French Creek at Saegertown, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	170	1,590	1,310	400	440	770	5,070	450	216	355	170	83
2	231	6,420	1,170	360	750	575	3,400	420	197	349	267	75
3	197	6,580	1,660	420	1,200	542	1,960	384	188	304	231	70
4	231	4,290	1,590	500	1,000	575	1,730	575	170	420	153	75
5	835	2,550	1,310	4,290	850	510	1,660	705	170	320	132	78
6	900	1,960	1,100	5,350	700	770	1,310	575	188	188	129	70
7	608	1,660	965	3,500	600	2,730	1,100	608	165	157	111	70
8	1,030	1,450	965	1,660	550	3,300	1,100	640	165	144	136	64
9	2,120	1,240	900	1,310	500	2,040	965	510	174	132	129	61
10	1,880	1,730	835	965	550	1,800	1,030	450	226	125	136	86
11	1,380	2,200	835	835	750	3,400	1,560	372	608	122	144	68
12	1,730	1,960	1,030	640	2,200	4,810	2,730	337	1,030	129	125	94
13	3,610	1,660	1,310	500	1,900	3,720	2,910	337	835	136	104	94
14	2,550	1,520	1,100	440	1,300	2,280	2,640	277	420	122	80	100
15	1,450	1,730	900	420	1,000	1,880	3,000	288	288	111	78	89
16	1,030	1,660	770	400	700	1,520	3,200	252	226	100	78	83
17	770	2,820	1,240	400	600	1,170	2,120	236	192	78	83	94
18	575	4,680	3,100	440	500	900	1,960	246	170	144	83	72
19	510	6,100	3,610	770	550	835	1,730	343	153	390	66	78
20	510	5,350	2,280	1,030	750	770	1,520	510	144	309	62	64
21	640	3,300	1,590	965	1,400	770	1,450	770	129	197	59	72
22	705	2,120	1,100	900	2,200	705	1,310	770	125	144	57	61
23	640	1,590	900	705	3,100	705	965	510	122	122	66	64
24	420	1,730	965	640	3,200	965	900	384	107	107	64	57
25	360	2,640	965	600	2,120	1,660	770	672	111	122	70	48
26	372	2,120	770	500	1,310	2,910	705	1,310	107	125	72	55
27	309	1,960	650	440	1,030	3,400	640	770	125	315	89	50
28	277	2,120	600	420	900	4,170	575	450	216	257	83	47
29	282	1,960	500	400	-------	4,290	510	365	770	144	94	53
30	267	1,590	440	400	-------	3,880	450	252	835	114	89	44
31	299	-------	420	400	-------	4,940	-------	221	-------	114	83	-------

Note.—Discharge Dec. 27 to Jan. 4, Jan. 13-18 and Jan. 25 to Feb. 22 estimated, because of ice, from discharge measurement, weather records, study of gage height graph and comparison with similar studies for French Creek at Kimmeytown and Carlton, Oil Creek near Rouseville and Brokenstraw Creek at Youngsville.

Monthly discharge of French Creek at Saegertown, for the year ending Sept. 30, 1922

(Drainage area 586 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,610	170	867	1.48	1.71
November	6,580	1,240	2,680	4.57	5.10
December	3,610	420	1,190	2.03	2.34
January	5,350	360	1,000	1.71	1.97
February	3,200	440	1,170	2.00	2.08
March	4,940	510	2,040	3.48	4.01
April	5,070	450	1,700	2.90	3.24
May	1,310	221	483	.824	.95
June	1,030	107	286	.488	.54
July	420	78	190	.324	.37
August	267	57	107	.183	.21
September	100	44	70.6	.120	.13
The Year	6,580	44	978	1.67	22.65

OHIO BASIN—STATION NO. 7

CUSSEWAGO CREEK NEAR MEADVILLE

Location.—At single-span steel highway bridge near Jones' Farm, about four and one-half miles northwest of Meadville, Crawford County.

Drainage Area.—88 square miles.

Records Available.—May 3, 1910, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Thomas McCay. Elevation of gage zero 1,071.77 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are subject to overflow; the right begins to overflow at a stage of about 8.6 feet and the left at a stage of about 9.1 feet. Bed is composed of sand, gravel and boulders. Low-water control is a gravel bar 5 feet below gage; practically permanent. Control for medium and high stages is an old dam about 4 miles below gage.

Extremes of Discharge.—Maximum stage during the year, 11.36 feet observed at 6 p. m. November 2 (discharge, about 1,250 second-feet); minimum, 0.47 foot from 6 p. m. September 28 to 6 p. m. September 29 (discharge, 1.3 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 900 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements at Cussewago Creek near Meadville, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
36	Dec. 2	O. B. McElrath	3.65	118
37	June 30	do	2.15	35.1
38	July 18	H. L. Landis	1.89	30.0

Daily Mean Gage Height, in feet, of Cussewago Creek near Meadville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.92	4.42	4.07	2.13	2.02	2.81	9.46	1.76	1.11	1.94	2.23	0.62
2	.96	9.69	3.70	2.13	3.38	2.72	8.87	1.65	1.08	2.03	3.00	.79
3	.95	10.50	4.72	2.15	5.46	2.41	7.45	1.66	1.07	2.12	2.43	.77
4	.98	9.42	5.57	2.90	5.56	2.31	5.46	2.19	1.06	2.02	1.60	.78
5	1.67	8.50	4.54	7.20	4.32	2.38	5.08	2.55	1.06	1.84	1.29	.71
6	2.28	6.82	3.82	9.78	3.70	2.92	4.42	2.26	1.08	1.42	1.10	.66
7	2.07	5.70	3.48	9.24	3.44	6.24	3.64	2.32	1.06	1.20	.99	.60
8	2.70	5.00	3.48	8.23	3.28	7.97	3.47	2.42	.96	1.16	1.00	.56
9	4.77	4.36	3.54	5.17	3.09	8.78	3.46	2.08	1.75	1.14	1.05	.54
10	5.49	5.30	3.47	3.51	3.00	8.04	3.63	1.84	3.90	1.06	1.08	.54
11	4.42	6.97	3.34	3.15	4.10	7.62	5.06	1.65	4.91	.94	.97	.60
12	4.08	7.40	4.38	2.83	6.37	8.83	6.60	1.54	5.48	.88	.84	.73
13	5.53	6.92	6.01	2.90	7.21	9.28	6.94	1.43	3.58	.90	.78	.70
14	6.32	5.53	5.52	2.65	6.91	8.10	6.04	1.32	2.23	1.00	.73	.70
15	5.19	5.38	4.27	2.47	4.76	6.03	6.08	1.28	1.75	1.02	.69	.66
16	3.26	5.97	3.52	2.40	3.53	4.86	7.16	1.20	1.45	.92	.66	.60
17	2.42	7.04	4.40	2.36	2.92	3.87	6.32	1.17	1.32	.89	.64	.57
18	2.12	8.47	6.87	2.34	2.51	3.28	5.22	1.18	1.26	1.57	.62	.56
19	1.92	10.40	7.50	3.04	2.76	3.00	5.04	1.44	1.18	1.88	.62	.54
20	2.20	9.72	7.13	3.95	5.02	3.05	4.38	2.61	1.11	1.99	.58	.52
21	3.08	9.06	4.89	4.22	6.54	3.02	4.25	3.72	1.04	1.47	.56	.52
22	3.50	8.16	3.90	3.73	6.52	2.73	3.49	3.96	.98	1.16	.54	.52
23	2.95	6.16	3.60	3.23	7.08	2.66	3.00	2.83	.97	1.02	.54	.52
24	2.40	4.78	3.14	2.78	7.76	3.54	2.72	2.11	.92	.95	.56	.52
25	2.06	5.82	3.16	2.40	7.15	5.23	2.50	2.55	.91	.83	.60	.51
26	1.84	6.22	3.02	2.19	4.56	6.84	2.38	2.96	.88	1.05	.67	.48
27	1.65	5.34	2.74	2.02	3.40	7.61	2.32	2.26	.95	1.08	.68	.50
28	1.53	5.60	2.54	1.94	3.18	7.95	2.18	1.75	2.16	.86	.67	.48
29	1.47	5.66	2.44	1.91	-------	8.51	2.04	1.46	2.64	.78	.61	.47
30	1.40	4.86	2.38	1.93	-------	8.87	1.87	1.30	2.26	.68	.59	.48
31	1.55	-------	2.26	1.96	-------	8.99	-------	1.20	-------	1.15	.58	-------

Note.—Stage-discharge relation Dec. 29 to Jan. 7, Jan. 13-19 and Jan. 27 to Feb. 23 affected by ice.

Daily discharge, in second-feet, of Cussewago Creek near Meadville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.7	151	133	28	28	62	806	24	9.2	30	40	2.2
2	6.3	849	109	28	42	58	686	22	8.6	34	72	3.9
3	6.2	1,040	169	32	90	46	422	22	8.4	35	48	3.6
4	6.7	785	227	42	80	42	220	38	8.2	32	20	3.7
5	22	610	157	95	80	46	193	52	8.2	28	13	3.0
6	42	340	115	650	90	67	151	40	8.6	16	9.0	2.5
7	34	234	97	650	85	275	103	42	8.2	11	6.8	2.0
8	58	187	97	556	75	520	97	46	6.3	10	7.0	1.8
9	175	151	97	199	70	667	97	35	24	9.8	8.0	1.6
10	220	206	97	97	65	520	103	28	121	8.2	8.6	1.6
11	151	365	87	82	95	453	193	22	181	6.0	6.5	2.0
12	133	422	151	64	190	667	316	19	220	5.1	4.5	3.2
13	220	352	257	55	240	765	352	16	103	5.4	3.7	2.9
14	285	220	220	46	200	538	257	13	40	7.0	3.2	2.9
15	199	213	145	40	130	257	265	13	24	7.4	2.8	2.5
16	87	257	97	36	80	181	393	11	16	5.7	2.5	2.0
17	46	365	151	36	60	121	285	10	13	5.2	2.3	1.8
18	35	610	352	38	46	87	199	11	12	19	2.2	1.6
19	29	1,010	437	60	50	72	187	16	11	29	2.2	1.6
20	38	849	379	127	80	72	151	54	9.2	32	1.9	1.5
21	77	725	181	139	130	72	139	109	7.8	17	1.8	1.5
22	97	556	121	109	200	60	97	127	6.7	10	1.6	1.5
23	70	275	103	82	280	56	72	64	6.5	7.4	1.6	1.5
24	46	175	77	62	485	97	58	35	5.7	6.2	1.8	1.5
25	34	241	82	46	393	199	50	52	5.5	4.4	2.0	1.5
26	28	275	72	38	163	340	46	70	5.1	8.0	2.6	1.3
27	22	206	60	30	92	453	42	40	6.2	8.6	2.7	1.4
28	19	227	52	28	82	520	38	24	36	4.8	2.6	1.3
29	17	234	42	26	-------	610	34	17	56	3.7	2.1	1.3
30	15	181	34	26	-------	686	28	13	40	2.7	2.0	1.3
31	19	-------	28	26	-------	705	-------	11	-------	10	1.9	-------

Note.—Discharge Dec. 29 to Jan. 7, 13-19 and Jan. 27 to Feb. 23 estimated, because of ice from weather records, study of gage height graph and comparison with similar studies for French Creek at Kimmeytown, Shenango River near Jamestown and Little Shenango River at Greenville.

Monthly discharge of Cussewago Creek near Meadville, for the year ending Sept. 30, 1922

(Drainage area 88 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	285	5.7	72.4	0.823	0.95
November	1,040	151	410	4.66	5.20
December	437	28	143	1.62	1.87
January	650	26	115	1.31	1.51
February	485	28	132	1.50	1.56
March	765	42	300	3.41	3.93
April	806	28	203	2.31	2.58
May	127	10	35.4	.402	.46
June	220	5.1	33.8	.384	.43
July	35	2.7	13.5	.153	.18
August	72	1.6	9.25	.105	.12
September	3.9	1.3	2.07	.024	.03
The Year	1,040	1.3	122	1.39	18.82

OHIO BASIN—STATION NO. 8

FRENCH CREEK AT CARLTON

Location.—At two-span steel highway bridge, Carlton, Mercer County.

Drainage Area.—1,000 square miles.

Records Available.—April 29, 1908, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Charles Coefield. Elevation of gage zero 1,033.60 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is of medium height and overflow begins at a stage of about 10 feet. Bed is composed of sand, gravel and boulders. Control is at a riffle at the measuring section; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 8.70 feet observed at 5 p. m. November 3 (discharge, 9,840 second-feet); minimum, 0.22 foot from 5 p. m. September 29 to 5 p. m. September 30 (discharge, 99 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 3,000 second-feet and well defined between 3,000 and 13,000 second-feet. Gage read twice daily to half tenths October 1 to July 21 and to hundredths since that date; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of French Creek at Carlton, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
63	Dec. 20	C. B. McElrath	5.20	3,790
64	July 21	do	1.48	458

Daily Mean Gage Height, in feet, of French Creek at Carlton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.85	2.01	3.45	1.82	2.10	2.25	7.94	1.60	1.00	1.75	2.44	0.68
2	.85	7.31	3.18	1.65	2.75	1.95	7.21	1.50	.92	1.20	2.08	.87
3	.85	8.63	3.52	1.88	3.90	1.95	5.48	1.50	.90	1.72	2.09	.94
4	.90	8.01	3.80	2.25	4.00	1.88	4.58	1.62	.90	1.72	1.89	.95
5	1.29	6.00	3.38	5.97	3.32	1.75	4.25	2.02	.88	1.60	1.73	.87
6	2.24	5.15	3.00	7.00	2.82	2.00	3.72	1.90	.85	1.32	1.62	.72
7	1.90	4.30	2.90	6.90	2.62	4.83	3.28	1.98	.80	1.08	1.49	.66
8	2.00	3.80	2.65	4.99	2.68	6.23	3.00	1.98	.75	.92	1.40	.62
9	3.70	3.38	2.60	3.75	2.50	5.39	2.92	1.80	.88	.90	1.31	.62
10	4.02	3.75	2.55	3.08	2.40	4.62	2.94	1.55	2.32	.82	1.19	.62
11	3.30	4.58	2.50	2.70	2.85	6.03	4.12	1.48	2.75	.80	1.14	.64
12	3.50	4.50	2.85	2.05	4.61	7.27	5.38	1.40	3.45	.70	1.08	.69
13	5.23	3.98	3.35	1.90	4.50	7.05	5.55	1.30	2.78	.70	.98	.72
14	5.30	3.75	3.35	2.00	3.82	5.71	5.07	1.15	2.02	.72	.80	.66
15	3.82	3.88	2.80	2.05	3.20	4.85	5.57	1.08	1.62	.75	.80	.62
16	2.98	4.20	2.42	1.90	2.55	4.10	6.02	1.05	1.48	.70	.74	.62
17	2.42	5.18	2.69	2.28	2.05	3.45	5.18	1.00	1.25	.70	.70	.59
18	2.08	7.15	4.98	2.60	1.90	3.05	4.72	.98	1.10	1.05	.69	.56
19	1.82	8.25	5.97	2.50	1.92	2.72	4.32	1.22	1.00	1.48	.93	.49
20	1.70	8.28	5.28	2.70	3.12	2.60	3.92	1.75	.90	1.75	.87	.47
21	1.90	7.18	4.12	3.20	4.08	2.38	3.65	2.25	.85	1.42	.72	.39
22	2.02	5.48	3.25	2.70	4.39	2.25	3.35	2.32	.80	1.19	.68	.37
23	1.98	4.45	2.92	2.38	5.64	2.15	2.98	1.92	.70	.98	.62	.33
24	1.80	3.95	2.75	2.10	5.79	2.51	2.65	1.55	.60	.93	.56	.30
25	1.52	4.75	2.55	1.85	5.00	3.47	2.40	1.99	.60	.89	.77	.27
26	1.42	4.72	2.40	1.92	3.75	4.74	2.25	3.28	.60	.85	.86	.26
27	1.40	4.38	2.20	2.95	3.02	5.55	2.05	2.62	.62	1.18	.82	.25
28	1.35	4.55	2.10	3.65	2.80	6.63	1.95	2.02	1.20	1.66	.87	.24
29	1.10	4.42	2.00	2.75	-------	7.01	1.85	1.52	1.72	1.25	.74	.23
30	1.10	3.88	1.95	2.60	-------	6.79	1.72	1.35	2.81	1.05	.74	.22
31	1.28	-------	1.90	2.25	-------	7.59	-------	1.12	-------	1.06	.72	-------

Note.—Stage-discharge relation Dec. 28 to Jan. 4, Jan. 13-19, Jan. 26 to Feb. 11 and Feb. 19-21 affected by ice.

Daily discharge, in second-feet, of French Creek at Carlton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	302	990	2,150	700	750	1,140	8,370	710	375	815	1,300	233
2	302	7,330	1,970	700	900	955	7,160	650	335	475	1,060	312
3	302	9,650	2,250	750	1,800	955	4,550	650	325	780	1,060	345
4	325	8,550	2,550	1,000	2,000	920	3,420	710	325	780	920	350
5	530	5,260	2,150	5,260	1,600	815	2,980	990	316	710	815	312
6	1,140	4,160	1,790	6,820	1,300	990	2,450	920	302	530	710	248
7	920	3,090	1,700	6,650	1,100	3,660	2,060	990	280	425	650	226
8	990	2,550	1,460	3,900	1,000	5,560	1,790	990	260	335	590	212
9	2,450	2,150	1,460	2,550	900	4,420	1,700	850	316	325	530	212
10	2,760	2,550	1,460	1,880	1,000	3,420	1,700	680	1,220	289	475	212
11	2,060	3,420	1,380	1,540	1,200	5,260	2,870	650	1,620	280	450	219
12	2,250	3,310	1,620	990	3,420	7,330	4,420	590	2,150	240	425	236
13	4,160	2,760	2,150	900	3,310	6,820	4,690	530	1,620	240	365	248
14	4,290	2,550	2,150	800	2,550	4,830	4,030	450	990	248	280	226
15	2,550	2,650	1,620	750	1,970	3,660	4,690	425	710	200	280	212
16	1,790	2,980	1,300	700	1,460	2,870	5,260	400	650	240	256	212
17	1,300	4,160	1,540	800	990	2,150	4,160	375	502	240	240	202
18	1,060	7,160	3,900	900	920	1,790	3,540	365	425	400	236	191
19	850	8,910	5,260	1,200	950	1,540	3,090	475	375	650	340	167
20	780	9,090	4,290	1,540	1,200	1,460	2,650	815	325	815	312	161
21	920	7,160	2,870	1,970	2,200	1,300	2,350	1,140	302	590	248	138
22	990	4,550	1,970	1,540	3,200	1,140	2,150	1,220	280	475	233	132
23	990	3,200	1,700	1,300	4,690	1,140	1,790	920	240	365	212	122
24	850	2,760	1,620	1,060	4,970	1,380	1,460	680	205	340	191	115
25	650	3,660	1,460	885	3,900	2,250	1,300	990	205	320	268	109
26	590	3,540	1,300	800	2,550	3,540	1,140	2,060	205	302	307	107
27	590	3,200	1,140	800	1,790	4,690	990	1,460	212	475	289	105
28	450	3,420	1,000	750	1,620	6,170	990	990	475	745	280	103
29	425	3,200	850	700	-------	6,820	885	650	780	502	256	101
30	425	2,650	800	700	-------	6,490	780	560	1,620	400	256	99
31	530	-------	750	700	-------	7,840	-------	425	-------	400	248	-------

Note.—Discharge Dec. 28 to Jan. 4, Jan. 13-19, Jan. 26 to Feb. 11 and Feb. 19-21, estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Saegertown, Brokenstraw Creek at Youngsville, Oil Creek near Rouseville and Allegheny River at Franklin.

Monthly discharge of French Creek at Carlton, for the year ending Sept. 30, 1922

(Drainage area 1,000 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	4,290	302	1,240	1.24	1.43
November	9,650	990	4,350	4.35	4.85
December	5,260	750	1,920	1.92	2.21
January	6,820	700	1,660	1.66	1.91
February	4,970	750	1,970	1.97	2.05
March	7,840	815	3,330	3.33	3.84
April	8,370	780	2,980	2.98	3.33
May	2,060	365	784	.784	.90
June	2,150	205	598	.598	.67
July	815	240	451	.451	.52
August	1,300	191	454	.454	.52
September	350	99	196	.196	.22
The Year	9,650	99	1,660	1.66	22.45

OHIO BASIN—STATION NO. 9

ALLEGHENY RIVER AT FRANKLIN

Location.—At four-span steel highway bridge, Eighth Street, Franklin, Venango County.

Drainage Area.—6,010 square miles.

Records Available.—April 1, 1905, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge in first span from left end; read by W. C. Rivers. Elevation of gage zero 958.26 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Both banks are high and do not overflow until a stage of 22 feet is reached. Bed is composed of gravel and boulders. Control is at a riffle, 200 feet long, about 1,000 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 9.05 feet observed at 6 p. m. April 1 (discharge, 43,300 second-feet); minimum, 0.04 foot on September 30 (discharge, 920 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent. Rating curve well defined between 1,000 and 110,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

The following discharge measurement was made by C. B. McElrath: No. 18, July 21: Gage height, 0.89 foot; discharge, 2,310 second-feet.

Daily Mean Gage Height, in feet, of Allegheny River at Franklin, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.38	1.94	5.27	1.66	1.62	3.39	8.93	2.17	1.39	3.19	1.08	0.71
2	1.46	7.45	4.67	1.53	1.92	2.95	8.52	2.02	1.28	2.75	.86	.70
3	1.38	8.30	4.65	1.40	2.46	2.67	7.17	1.92	1.25	2.75	.88	.80
4	1.26	7.16	4.57	1.80	2.77	2.62	6.17	2.05	1.38	2.49	1.00	1.19
5	1.21	5.99	4.17	5.14	2.69	2.40	5.57	2.34	1.58	2.35	.96	1.06
6	1.77	5.40	3.78	7.79	2.60	2.49	4.97	2.41	1.68	2.27	.92	.77
7	1.67	4.78	3.45	6.81	2.32	4.79	4.48	2.44	1.53	1.93	.84	.59
8	1.51	4.18	3.23	5.26	2.24	7.89	4.15	2.62	1.48	1.67	.84	.50
9	2.16	3.76	3.05	4.49	2.18	7.01	3.95	2.52	1.48	1.49	1.76	.42
10	3.05	3.93	2.87	3.76	2.08	5.76	3.83	2.34	1.84	1.31	2.47	.36
11	2.73	4.84	2.75	3.36	2.22	7.03	4.73	2.15	2.76	1.15	1.70	.30
12	2.72	4.84	2.79	2.95	3.18	8.27	6.54	1.99	5.97	1.03	1.25	.40
13	4.40	4.42	3.03	2.48	3.75	7.64	6.67	1.87	6.24	.97	.96	.48
14	4.53	4.02	2.97	2.08	3.58	6.83	6.11	1.75	4.60	.92	.75	.54
15	3.45	4.08	2.68	1.96	3.15	6.57	7.05	1.73	3.34	.88	.60	.83
16	2.69	4.18	2.95	1.84	2.62	5.90	7.49	1.71	2.66	.82	.50	.64
17	2.19	4.92	2.35	1.62	2.15	5.09	6.64	1.59	2.27	.73	.42	.50
18	1.89	6.88	4.30	1.74	1.92	4.28	6.70	1.51	2.17	.92	.36	.42
19	1.71	8.54	6.15	2.34	2.09	3.88	6.30	1.67	2.10	1.00	.40	.36
20	1.67	8.68	5.61	2.62	2.92	3.54	5.70	2.32	1.90	1.00	.51	.30
21	1.89	7.77	4.53	2.86	3.77	3.38	5.40	2.73	1.66	.94	.54	.26
22	2.03	6.56	3.71	2.58	4.71	3.16	4.91	2.84	1.45	.78	.56	.23
23	2.09	5.64	3.17	2.22	6.60	2.99	4.36	2.55	1.31	.67	.40	.20
24	1.89	4.80	3.14	1.78	7.05	2.94	3.84	2.23	1.28	.58	.32	.16
25	1.67	5.41	3.05	1.44	6.82	3.34	3.46	2.15	1.23	.53	1.45	.14
26	1.55	5.58	2.81	1.23	5.81	3.81	3.18	3.03	1.16	.50	2.11	.10
27	1.41	5.25	2.57	1.42	4.75	4.35	2.93	2.82	1.03	.54	1.91	.08
28	1.30	6.32	2.47	1.64	4.00	6.29	2.71	2.40	1.14	.61	1.74	.07
29	1.23	6.74	2.36	1.72	-------	7.46	2.54	2.03	1.69	.62	1.34	.07
30	1.17	6.01	2.10	1.77	-------	7.32	2.34	1.75	2.90	.50	1.02	.06
31	1.19	-------	1.84	1.92	-------	8.28	-------	1.54	-------	.37	.84	-------

Daily discharge, in second-feet, of Allegheny River at Franklin, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,580	5,220	19,800	4,540	4,210	10,900	42,600	6,280	3,580	10,100	2,720	1,810
2	3,740	32,400	16,800	3,890	5,220	9,300	39,800	5,570	3,280	8,520	2,120	1,810
3	3,580	38,400	16,300	3,580	7,280	8,140	31,200	5,220	3,140	8,520	2,230	2,010
4	3,140	31,200	16,300	4,880	8,520	7,760	25,200	5,570	3,580	7,380	2,470	2,990
5	2,990	24,000	14,300	18,800	8,140	7,010	21,600	6,640	4,210	7,010	2,350	2,600
6	4,880	20,400	12,500	34,900	7,760	7,380	18,300	7,010	4,540	6,640	2,230	1,910
7	4,540	17,300	10,900	28,800	6,640	17,500	15,800	7,010	3,800	5,220	2,120	1,630
8	3,890	14,300	10,100	19,800	6,280	35,600	14,300	7,760	3,890	4,540	2,120	1,470
9	6,280	12,500	9,300	15,800	6,280	30,000	13,300	7,380	3,890	3,890	4,880	1,330
10	9,300	12,900	8,910	12,500	5,920	22,800	12,500	6,640	4,880	3,280	7,380	1,260
11	8,140	17,300	8,520	10,900	6,280	30,000	16,800	6,280	8,520	2,860	4,540	1,200
12	8,140	17,300	8,520	9,300	10,100	38,400	27,000	5,570	24,000	2,600	3,140	1,330
13	15,300	15,300	9,300	7,380	12,500	33,600	28,200	5,220	25,200	2,350	2,350	1,470
14	15,800	13,300	9,300	5,920	11,700	29,400	24,000	4,880	16,300	2,230	1,910	1,550
15	10,900	13,800	8,140	5,570	10,100	27,600	30,000	4,540	10,500	2,230	1,630	2,120
16	8,140	14,300	7,010	4,880	7,760	23,400	33,000	4,540	8,140	2,010	1,470	1,720
17	6,280	17,800	7,010	4,210	6,280	18,800	27,600	4,210	6,640	1,910	1,330	1,470
18	5,220	29,400	14,800	4,540	5,220	15,300	28,200	3,890	6,280	2,230	1,260	1,330
19	4,540	29,800	25,200	6,640	5,920	12,900	25,800	4,540	5,920	2,470	1,330	1,260
20	4,540	41,200	21,600	7,760	8,910	11,300	22,200	6,640	5,220	2,470	1,470	1,200
21	4,880	34,900	15,800	8,910	12,500	10,900	20,400	8,140	4,540	2,350	1,550	1,140
22	5,570	27,600	12,100	7,760	16,800	10,100	17,800	8,570	3,740	2,010	1,550	1,140
23	5,920	21,600	10,100	6,280	27,600	8,910	15,300	7,760	3,280	1,720	1,330	1,080
24	5,220	17,300	9,700	4,880	33,600	8,910	12,500	6,280	3,280	1,630	1,200	1,070
25	4,540	20,400	9,300	3,740	28,800	10,500	11,300	6,280	3,140	1,550	3,740	1,020
26	4,210	21,600	8,520	3,140	22,800	12,500	10,100	9,300	2,860	1,470	5,920	970
27	3,580	19,300	7,760	3,580	17,300	15,300	8,910	8,520	2,600	1,550	5,220	970
28	3,280	25,800	7,380	4,210	13,300	25,800	8,140	7,010	2,860	1,630	4,540	920
29	3,140	28,200	7,010	4,540	-------	33,000	7,380	5,570	4,540	1,630	3,430	920
30	2,860	24,000	5,920	4,880	-------	31,800	6,640	4,880	8,910	1,470	2,470	920
31	2,990	-------	4,880	5,220	-------	38,400	-------	3,890	-------	1,260	2,120	-------

Daily Mean Gage Height, in feet, of Cussewago Creek near Meadville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.92	4.42	4.07	2.13	2.02	2.81	9.46	1.76	1.11	1.94	2.23	0.62
2	.90	9.69	3.70	2.13	3.38	2.72	8.87	1.65	1.08	2.03	3.00	.79
3	.95	10.50	4.72	2.15	5.46	2.41	7.45	1.66	1.07	2.12	2.43	.77
4	.98	9.42	5.57	2.90	6.56	2.31	5.46	2.19	1.06	2.02	1.60	.78
5	1.67	8.50	4.54	7.20	4.32	2.38	5.08	2.55	1.06	1.84	1.29	.71
6	2.28	6.82	3.82	9.78	3.70	2.92	4.42	2.26	1.08	1.42	1.10	.66
7	2.07	5.70	3.48	9.24	3.44	6.24	3.64	2.32	1.06	1.20	.99	.60
8	2.70	5.00	3.48	8.23	3.28	7.97	3.47	2.42	.96	1.16	1.00	.56
9	4.77	4.36	3.54	5.17	3.09	8.78	3.46	2.08	1.75	1.14	1.05	.54
10	5.49	5.30	3.47	3.51	3.00	8.04	3.63	1.84	3.90	1.06	1.08	.54
11	4.42	6.97	3.34	3.15	4.10	7.62	5.06	1.65	4.91	.94	.97	.60
12	4.08	7.40	4.38	2.83	6.37	8.83	6.60	1.54	5.48	.88	.84	.73
13	5.53	6.92	6.01	2.90	7.21	9.28	6.94	1.43	3.58	.90	.78	.70
14	6.32	5.53	5.52	2.65	6.91	8.10	6.04	1.32	2.23	1.00	.73	.70
15	5.19	5.38	4.27	2.47	4.76	6.03	6.08	1.28	1.75	1.02	.69	.66
16	3.26	5.97	3.52	2.40	3.53	4.86	7.16	1.20	1.45	.92	.66	.60
17	2.42	7.04	4.10	2.36	2.92	3.87	6.32	1.17	1.32	.89	.64	.57
18	2.12	8.47	6.87	2.34	2.51	3.28	5.22	1.18	1.26	1.57	.62	.56
19	1.92	10.40	7.50	3.04	2.76	3.00	5.04	1.44	1.18	1.88	.62	.54
20	2.20	9.72	7.13	3.95	5.02	3.05	4.38	2.61	1.11	1.99	.58	.52
21	3.08	9.06	4.89	4.22	6.54	3.02	4.25	3.72	1.04	1.47	.56	.52
22	3.50	8.16	3.90	3.73	6.52	2.73	3.49	3.96	.98	1.16	.54	.52
23	2.95	6.16	3.60	3.23	7.08	2.66	3.00	2.83	.97	1.02	.54	.52
24	2.40	4.78	3.14	2.78	7.76	3.54	2.72	2.11	.92	.95	.56	.52
25	2.06	5.82	3.16	2.40	7.15	5.23	2.50	2.55	.91	.83	.60	.51
26	1.84	6.22	3.02	2.19	4.56	6.84	2.38	2.96	.88	1.05	.67	.48
27	1.65	5.34	2.74	2.02	3.40	7.61	2.32	2.26	.95	1.08	.68	.50
28	1.53	5.60	2.54	1.94	3.18	7.95	2.18	1.75	2.16	.86	.67	.48
29	1.47	5.66	2.44	1.91	-------	8.51	2.04	1.46	2.64	.78	.61	.47
30	1.40	4.86	2.38	1.93	-------	8.87	1.87	1.30	2.26	.68	.59	.48
31	1.55	-------	2.26	1.96	-------	8.99	-------	1.20	-------	1.15	.58	-------

Note.—Stage-discharge relation Dec. 29 to Jan. 7, Jan. 13-19 and Jan. 27 to Feb. 23 affected by ice.

Daily discharge, in second-feet, of Cussewago Creek near Meadville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.7	151	133	28	28	62	806	24	9.2	30	40	2.2
2	6.3	849	109	28	42	58	686	22	8.6	34	72	3.9
3	6.2	1,040	169	32	90	46	422	22	8.4	35	48	3.6
4	6.7	785	227	42	80	42	220	38	8.2	32	20	3.7
5	22	610	157	95	80	46	193	52	8.2	28	13	3.0
6	42	340	115	650	90	67	151	40	8.6	16	9.0	2.5
7	34	234	97	650	85	275	103	42	8.2	11	6.8	2.0
8	58	187	97	556	75	520	97	46	6.3	10	7.0	1.8
9	175	151	97	199	70	667	97	35	24	9.8	8.0	1.6
10	220	206	97	97	65	520	103	28	121	8.2	8.6	1.6
11	151	365	87	82	95	453	193	22	181	6.0	6.5	2.0
12	133	422	151	64	190	667	316	19	220	5.1	4.5	3.2
13	220	352	257	56	240	765	352	16	103	5.4	3.7	2.9
14	285	220	220	46	200	538	257	13	40	7.0	3.2	2.9
15	199	213	145	40	130	257	265	13	24	7.4	2.8	2.5
16	87	257	97	36	80	181	393	11	16	5.7	2.5	2.0
17	46	365	151	36	60	121	285	10	13	5.2	2.3	1.8
18	35	610	352	38	46	87	199	11	12	19	2.2	1.6
19	20	1,010	437	60	50	72	187	16	11	29	2.2	1.6
20	38	849	379	127	80	72	151	54	9.2	32	1.9	1.5
21	77	725	181	139	130	72	139	109	7.8	17	1.8	1.5
22	97	556	121	109	200	60	97	127	6.7	10	1.6	1.5
23	70	275	103	82	280	56	72	64	6.5	7.4	1.6	1.5
24	46	175	77	62	485	97	58	35	5.7	6.2	1.8	1.5
25	34	241	82	46	393	199	50	52	5.5	4.4	2.0	1.5
26	28	275	72	38	163	340	46	70	5.1	8.0	2.6	1.3
27	22	206	60	30	92	453	42	40	6.2	8.6	2.7	1.4
28	19	227	52	28	82	520	38	24	36	4.8	2.6	1.3
29	17	234	42	26	-------	610	34	17	56	3.7	2.1	1.3
30	15	181	34	26	-------	686	28	13	40	2.7	2.0	1.3
31	19	-------	28	26	-------	705	-------	11	-------	10	1.9	-------

Note.—Discharge Dec. 29 to Jan. 7, 13-19 and Jan. 27 to Feb. 23 estimated, because of ice from weather records, study of gage height graph and comparison with similar studies for French Creek at Kimmeytown, Shenango River near Jamestown and Little Shenango River at Greenville.

Monthly discharge of Cussewago Creek near Meadville, for the year ending Sept. 30, 1922

(Drainage area 88 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	285	5.7	72.4	0.823	0.95
November	1,040	151	410	4.66	5.20
December	437	28	143	1.62	1.87
January	650	26	115	1.31	1.51
February	485	28	132	1.50	1.56
March	765	42	300	3.41	3.93
April	806	28	203	2.31	2.58
May	127	10	35.4	.402	.46
June	220	5.1	33.8	.384	.43
July	35	2.7	13.5	.153	.18
August	72	1.6	9.25	.105	.12
September	3.9	1.3	2.07	.024	.03
The Year	1,040	1.3	122	1.39	18.82

OHIO BASIN—STATION NO. 8

FRENCH CREEK AT CARLTON

Location.—At two-span steel highway bridge, Carlton, Mercer County.

Drainage Area.—1,000 square miles.

Records Available.—April 29, 1908, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Charles Coefield. Elevation of gage zero 1,033.60 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is of medium height and overflow begins at a stage of about 10 feet. Bed is composed of sand, gravel and boulders. Control is at a riffle at the measuring section; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 8.70 feet observed at 5 p. m. November 3 (discharge, 9,840 second-feet); minimum, 0.22 foot from 5 p. m. September 29 to 5 p. m. September 30 (discharge, 99 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 3,000 second-feet and well defined between 3,000 and 13,000 second-feet. Gage read twice daily to half tenths October 1 to July 21 and to hundredths since that date; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of French Creek at Carlton, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
63	Dec. 20	C. B. McElrath	5.20	3,790
64	July 21	do	1.48	458

Daily Mean Gage Height, in feet, of French Creek at Carlton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.85	2.01	3.45	1.82	2.10	2.25	7.94	1.60	1.00	1.75	2.44	0.68
2	.85	7.31	3.18	1.65	2.75	1.95	7.21	1.50	.92	1.20	2.08	.87
3	.85	8.63	3.52	1.88	3.90	1.95	5.48	1.50	.90	1.72	2.09	.94
4	.90	8.01	3.80	2.25	4.00	1.88	4.58	1.62	.90	1.72	1.89	.95
5	1.29	6.00	3.38	5.97	3.32	1.75	4.25	2.02	.88	1.60	1.73	.87
6	2.24	5.15	3.00	7.00	2.82	2.00	3.72	1.90	.85	1.32	1.62	.72
7	1.90	4.30	2.90	6.90	2.62	4.83	3.28	1.98	.80	1.08	1.49	.66
8	2.00	3.80	2.65	4.99	2.68	6.23	3.00	1.98	.75	.92	1.40	.62
9	3.70	3.38	2.60	3.75	2.50	5.39	2.92	1.80	.88	.90	1.31	.62
10	4.02	3.75	2.55	3.08	2.40	4.62	2.94	1.55	2.32	.82	1.19	.62
11	3.30	4.58	2.50	2.70	2.85	6.03	4.12	1.48	2.75	.80	1.14	.64
12	3.50	4.50	2.85	2.05	4.61	7.27	5.38	1.40	3.45	.70	1.08	.69
13	5.23	3.98	3.35	1.90	4.50	7.05	5.55	1.30	2.78	.70	.98	.72
14	5.30	3.75	3.35	2.00	3.82	5.71	5.07	1.15	2.02	.72	.80	.66
15	3.82	3.88	2.80	2.05	3.20	4.85	5.57	1.08	1.62	.75	.80	.62
16	2.98	4.20	2.42	1.90	2.55	4.10	6.02	1.05	1.48	.70	.74	.62
17	2.42	5.18	2.69	2.28	2.05	3.45	5.18	1.00	1.25	.70	.70	.59
18	2.08	7.15	4.98	2.60	1.90	3.05	4.72	.98	1.10	1.05	.69	.56
19	1.82	8.25	5.97	2.50	1.92	2.72	4.32	1.22	1.00	1.48	.93	.49
20	1.70	8.28	5.28	2.70	3.12	2.60	3.99	1.75	.90	1.75	.87	.47
21	1.90	7.18	4.12	3.20	4.08	2.38	3.65	2.25	.85	1.42	.72	.39
22	2.02	5.48	3.25	2.70	4.39	2.25	3.35	2.32	.80	1.19	.68	.37
23	1.98	4.45	2.92	2.38	5.64	2.15	2.98	1.92	.70	.98	.62	.33
24	1.80	3.95	2.75	2.10	5.79	2.51	2.65	1.55	.60	.93	.56	.30
25	1.52	4.75	2.55	1.85	5.00	3.47	2.40	1.99	.60	.89	.77	.27
26	1.42	4.72	2.40	1.92	3.75	4.74	2.25	3.28	.60	.85	.86	.26
27	1.40	4.38	2.20	2.95	3.02	5.55	2.05	2.62	.62	1.18	.82	.25
28	1.15	4.55	2.10	3.65	2.80	6.63	1.92	2.02	1.20	1.66	.87	.24
29	1.10	4.42	2.00	2.75	-------	7.01	1.85	1.52	1.72	1.25	.74	.23
30	1.10	3.88	1.95	2.60	-------	6.79	1.72	1.35	2.81	1.05	.74	.22
31	1.28	-------	1.90	2.25	-------	7.59	-------	1.12	-------	1.06	.72	-------

Note.—Stage-discharge relation Dec. 28 to Jan. 4, Jan. 13-19, Jan. 26 to Feb. 11 and Feb. 19-21 affected by ice.

Daily discharge, in second-feet, of French Creek at Carlton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	302	990	2,150	700	750	1,140	8,370	710	375	815	1,300	233
2	302	7,330	1,970	700	900	955	7,160	650	335	475	1,060	312
3	302	9,650	2,250	750	1,800	955	4,550	650	325	780	1,060	345
4	325	8,550	2,550	1,000	2,000	920	3,420	710	325	780	920	350
5	530	5,260	2,150	5,260	1,600	815	2,980	990	316	710	815	312
6	1,140	4,160	1,790	6,820	1,300	990	2,450	920	302	530	710	248
7	920	3,090	1,700	6,650	1,100	3,660	2,060	990	280	425	650	226
8	990	2,550	1,460	3,990	1,000	5,560	1,790	990	260	335	590	212
9	2,450	2,150	1,460	2,550	900	4,420	1,700	850	316	325	530	212
10	2,760	2,550	1,460	1,880	1,000	3,420	1,700	680	1,220	289	475	212
11	2,060	3,420	1,380	1,540	1,200	5,260	2,870	650	1,020	280	450	219
12	2,250	3,310	1,620	990	3,420	7,330	4,420	590	2,150	240	425	236
13	4,160	2,760	2,150	900	3,310	6,820	4,090	530	1,620	240	365	248
14	4,290	2,550	2,150	800	2,550	4,830	4,030	450	990	248	280	226
15	2,550	2,650	1,620	750	1,970	3,660	4,090	425	710	200	280	212
16	1,790	2,980	1,300	700	1,460	2,870	5,200	400	650	240	256	212
17	1,300	4,160	1,540	800	990	2,150	4,160	375	502	240	240	202
18	1,060	7,160	3,900	900	920	1,790	3,540	365	425	400	236	191
19	850	8,910	5,260	1,200	950	1,540	3,090	475	375	650	340	167
20	780	9,090	4,290	1,540	1,200	1,460	2,650	815	325	815	312	161
21	920	7,160	2,870	1,970	2,200	1,300	2,350	1,140	302	590	248	138
22	990	4,550	1,970	1,540	3,200	1,140	2,150	1,220	280	475	233	132
23	990	3,200	1,700	1,300	4,690	1,140	1,790	920	240	365	212	122
24	850	2,760	1,620	1,060	4,970	1,380	1,460	680	205	340	191	115
25	650	3,660	1,460	885	3,900	2,250	1,300	990	205	320	268	109
26	590	3,540	1,300	800	2,550	3,540	1,140	2,060	205	302	307	107
27	590	3,200	1,140	800	1,790	4,690	990	1,460	212	475	289	105
28	450	3,420	1,000	750	1,620	6,170	990	990	475	745	280	103
29	425	3,200	850	700	-------	6,820	885	650	780	502	256	101
30	425	2,650	800	700	-------	6,490	780	560	1,620	400	256	99
31	530	-------	750	700	-------	7,840	-------	425	-------	400	248	-------

Note.—Discharge Dec. 28 to Jan. 4, Jan. 13-19, Jan. 26 to Feb. 11 and Feb. 19-21, estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for French Creek at Saegertown, Brokenstraw Creek at Youngsville, Oil Creek near Rouseville and Allegheny River at Franklin.

Monthly discharge of French Creek at Carlton, for the year ending Sept. 30, 1922

(Drainage area 1,000 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	4,290	302	1,240	1.24	1.43
November	9,650	990	4,350	4.35	4.85
December	5,260	750	1,920	1.92	2.21
January	6,820	700	1,660	1.66	1.91
February	4,970	750	1,970	1.97	2.05
March	7,840	815	3,330	3.33	3.84
April	8,370	780	2,980	2.98	3.33
May	2,060	365	784	.784	.90
June	2,150	205	598	.598	.67
July	815	240	451	.451	.52
August	1,300	191	454	.454	.52
September	350	99	196	.196	.22
The Year	9,650	99	1,660	1.66	22.45

OHIO BASIN—STATION NO. 9

ALLEGHENY RIVER AT FRANKLIN

Location.—At four-span steel highway bridge, Eighth Street, Franklin, Venango County.

Drainage Area.—6,010 square miles.

Records Available.—April 1, 1905, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge in first span from left end; read by W. C. Rivers. Elevation of gage zero 958.26 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Both banks are high and do not overflow until a stage of 22 feet is reached. Bed is composed of gravel and boulders. Control is at a riffle, 200 feet long, about 1,000 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 9.05 feet observed at 6 p. m. April 1 (discharge, 43,300 second-feet); minimum, 0.04 foot on September 30 (discharge, 920 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent. Rating curve well defined between 1,000 and 110,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

The following discharge measurement was made by C. B. McElrath: No. 18, July 21: Gage height, 0.89 foot; discharge, 2,310 second-feet.

Daily Mean Gage Height, in feet, of Allegheny River at Franklin, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.38	1.94	5.27	1.66	1.62	3.39	8.93	2.17	1.39	3.19	1.08	0.71
2	1.46	7.45	4.67	1.53	1.92	2.95	8.52	2.02	1.28	2.75	.86	.70
3	1.38	8.30	4.65	1.40	2.46	2.67	7.17	1.92	1.25	2.75	.88	.80
4	1.26	7.16	4.57	1.80	2.77	2.62	6.17	2.05	1.38	2.49	1.00	1.19
5	1.21	5.99	4.17	5.14	2.69	2.46	5.57	2.34	1.58	2.35	.96	1.06
6	1.77	5.40	3.78	7.79	2.60	2.49	4.97	2 41	1.68	2.27	.92	.77
7	1.67	4.78	3.45	6.81	2.52	4.79	4.48	2.44	1.53	1.93	.84	.59
8	1.51	4.18	3.23	5.26	2.24	7.89	4.15	2.02	1.48	1.67	.84	.50
9	2.16	3.76	3.05	4.49	2.18	7.01	3.95	2.52	1.48	1.49	1.76	.42
10	3.05	3.93	2.87	3.76	2.08	5.76	3.83	2.34	1.84	1.31	2.47	.36
11	2.73	4.84	2.75	3.36	2.22	7.03	4.73	2.15	2.76	1.15	1.70	.30
12	2.72	4.84	2.79	2.95	3.18	8.27	6.54	1.99	5.97	1.03	1.25	.40
13	4.40	4.42	3.03	2.48	3.75	7.64	6.67	1.87	6.24	.97	.96	.48
14	4.53	4.02	2.97	2.08	3.58	6.88	6.11	1.75	4.60	.92	.75	.54
15	3.45	4.08	2.68	1.96	3.15	6.57	7.05	1.73	3.34	.88	.60	.83
16	2.69	4.18	2.95	1.84	2.62	5.90	7.49	1.71	2.66	.82	.50	.64
17	2.19	4.92	2.35	1.62	2.15	5.09	6.64	1.59	2.27	.73	.42	.50
18	1.89	6.88	4.30	1.74	1.92	4.28	6.70	1.51	2.17	.92	.36	.42
19	1.71	8.54	6.15	2.34	2.09	3 88	6.30	1.67	2.10	1.00	.40	.36
20	1.67	8.68	5.61	2.62	2.92	3.54	5.70	2.32	1.90	1.00	.51	.30
21	1.89	7.77	4.53	2.86	3.77	3.38	5.40	2.73	1.66	.94	.54	.26
22	2.03	6.56	3.71	2.58	4.71	3.16	4.91	2.84	1.45	.78	.56	.23
23	2.09	5.64	3.17	2.22	6.60	2.99	4.36	2.55	1.31	.67	.40	.20
24	1.88	4.80	3.14	1.78	7.05	2.94	3.84	2.23	1.28	.58	.32	.16
25	1.67	5.41	3.05	1.44	6.82	3.34	3.46	2.15	1.23	.53	1.45	.14
26	1.55	5.58	2.81	1.23	5.81	3.81	3.18	3.03	1.16	.50	2.11	.10
27	1.41	5.25	2.57	1.42	4.75	4.35	2.93	2.82	1.03	.54	1.91	.08
28	1.30	6.32	2.47	1.64	4.00	6.29	2.71	2.40	1.14	.61	1.74	.07
29	1.23	6.74	2.36	1.72	-------	7.46	2.54	2.03	1.69	.62	1.34	.07
30	1.17	6.01	2.10	1.77	-------	7.32	2.34	1.75	2 90	.50	1.02	.06
31	1.19	-------	1.84	1.92	-------	8.28	-------	1.54	-------	.37	.84	-------

Daily discharge, in second-feet, of Allegheny River at Franklin, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,580	5,220	19,800	4,540	4,210	10,900	42,600	6,280	3,580	10,100	2,720	1,810
2	3,740	32,400	16,800	3,890	5,220	9,300	39,800	5,570	3,280	8,520	2,120	1,810
3	3,580	38,400	16,300	3,580	7,280	8,140	31,200	5,220	3,140	8,520	2,230	2,010
4	3,140	31,200	16,300	4,880	8,520	7,760	25,200	5,570	3,580	7,380	2,470	2,990
5	2,990	24,000	14,300	18,800	8,140	7,010	21,600	6,640	4,210	7,010	2,350	2,600
6	4,880	20,400	12,500	34,900	7,760	7,380	18,200	7,010	4,540	6,640	2,230	1,910
7	4,540	17,200	10,900	28,800	6,640	17,300	15,800	7,010	3,800	5.220	2,120	1,630
8	3,890	14,200	10,100	19,800	6,280	35,600	14,300	7,700	3,890	4,540	2,120	1,470
9	6,280	12,500	9,300	15,800	6,280	30,000	13,200	7,380	3,800	3,800	4,880	1,330
10	9,300	12,900	8,910	12,500	5,920	22,800	12,500	6,640	4,880	3,280	7,380	1,260
11	8,140	17,300	8,520	10,900	6,280	30,000	16,800	6,280	8,520	2,860	4,540	1.200
12	8,140	17,300	8,520	9,300	10,100	38,400	27,000	5.570	24.000	2,600	3,140	1,330
13	15,300	15,300	9,300	7,380	12,500	33,600	28,200	5.220	25 2'0	2.350	2,350	1.470
14	15,800	13,300	9,300	5,920	11,700	29,400	24,000	4,880	16,300	2,230	1,910	1,550
15	10,900	13,800	8,140	5,570	10,100	27,600	30,000	4,540	10.5'0	2,230	1,630	2,120
16	8,140	14,300	7,010	4,880	7,760	23,400	33,000	4,540	8.1'0	2,010	1,470	1.720
17	6,280	17,800	7,010	4,210	6,280	18,800	27,600	4.210	6,640	1,910	1,330	1,470
18	5,220	29,400	14,800	4,540	5,220	15,300	28,200	3,890	6,280	2,230	1,260	1,330
19	4,540	39,800	25,200	6,640	5,920	12,900	25,800	4,540	5,920	2,470	1,330	1.260
20	4,540	41,200	21,600	7,760	8,910	11,300	22,200	6,640	5,220	2,470	1,470	1.200
21	4,880	34,900	15,800	8,910	12,500	10,900	20,400	8.140	4,540	2.350	1,550	1,140
22	5,570	27,600	12,100	7,760	16,800	10.100	17,800	8.5'0	3.740	2.010	1,550	1,140
23	5,920	21,600	10,100	6,280	27,600	8,910	15,300	7.700	3,280	1.720	1,230	1.080
24	5,220	17,300	9,700	4,880	33,600	8,910	12,500	6,280	3,280	1,630	1,200	1.010
25	4,540	20,400	9,300	3,740	28,800	10,700	11,300	6,280	3,140	1,550	3,740	1,020
26	4.210	21,600	8,520	3,140	22,800	12,500	10,100	9,300	2,860	1,470	5,920	970
27	3,580	19,300	7,760	3,580	17,300	15,300	8,910	8,520	2,600	1,550	5,220	970
28	3,280	25,800	7,380	4,210	13,300	25.800	8,140	7,010	2,860	1,630	4,540	920
29	3,140	28,200	7,010	4,540	-------	33,000	7,380	5,570	4,540	1,630	3,430	920
30	2,860	24,000	5,920	4,880	-------	31,800	6,640	4,880	8,910	1,470	2,470	920
31	2.990	-------	4,880	5,220	-------	38,400	-------	3,890	-------	1,260	2,120	-------

Monthly discharge of Allegheny River at Franklin, for the year ending Sept. 30, 1922

(Drainage area 6,010 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	15,800	2,860	5,780	0.962	1.11
November	41,200	5,220	22,300	3.71	4.14
December	25,200	4,880	11,400	1.90	2.19
January	34,900	3,140	8,770	1.46	1.68
February	33,600	4,210	11,600	1.93	2.01
March	38,400	7,010	19,500	3.24	3.74
April	42,600	6,640	20,500	3.41	3.81
May	9,300	3,890	6,180	1.03	1.19
June	25,200	2,600	6,510	1.08	1.21
July	10,100	1,260	3,440	.572	.66
August	7,380	1,200	2,710	.451	.52
September	2,990	920	1,450	.241	.27
The Year	42,600	920	9,970	1.66	22.53

OHIO BASIN—STATION NO. 10

CLARION RIVER NEAR CLARION

Location.—At single-span steel highway bridge, known as Toby Bridge, about one mile north of Clarion, Clarion County.

Drainage Area.—930 square miles.

Records Available.—November 17, 1884, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by B. O. Cyphert. Elevation of gage zero 1,052.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel, boulders and ledge. Control is at the first of a series of riffles about 800 feet below gage; permanent.

Extremes of Discharge.—Maximum stage during the year, 7.65 feet at 5 p. m. March 28 (discharge, 12,000 second-feet); minimum, —0.40 foot from 8 a. m. September 21 to 5 p. m. September 30 (discharge, 116 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 100 and 30,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for estimated periods, when they are probably fair.

Discharge measurements of Clarion River at Clarion, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
89	Jan. 5	C. B. McElrath	3.24	2,396
90	July 22	H. L. Landis	0.19	223

Daily Mean Gage Height, in feet, of Clarion River near Clarion, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.94	1.72	4.18	1.89	-------	2.09	6.87	1.75	1.14	0.87	0.10	0.10
2	1.95	5.45	3.70	1.71	-------	1.98	6.22	1.67	1.11	.80	.25	.10
3	1.60	5.27	3.82	1.24	-------	1.93	5.25	1.60	1.43	.82	.52	—.10
4	1.50	4.03	3.33	1.88	-------	1.83	4.72	1.63	2.63	.95	.38	—.10
5	1.55	3.53	3.07	2.89	-------	1.86	4.45	1.88	1.85	1.17	.29	.05
6	1.47	3.26	2.95	3.93	-------	1.98	3.82	1.82	1.70	.88	.19	.50
7	1.37	3.34	2.68	2.75	-------	3.84	3.55	1.77	2.00	.75	.15	.25
8	1.30	2.68	2.55	2.53	-------	5.60	3.52	1.66	1.90	.55	.33	.00
9	1.27	2.15	2.34	2.64	-------	4.35	3.15	1.56	1.62	.40	.45	.00
10	1.34	2.95	2.23	2.52	-------	3.83	3.17	1.37	1.87	.37	.78	—.10
11	1.25	3.60	2.07	2.43	-------	4.17	3.40	1.32	2.73	.29	.40	—.10
12	1.19	3.22	2.12	2.20	-------	5.39	3.78	1.29	2.91	.20	.18	—.10
13	1.17	3.06	2.16	2.09	-------	4.54	3.55	1.21	2.85	.20	.10	—.10
14	1.59	2.86	2.09	1.63	-------	4.25	3.55	1.12	2.30	.17	.00	.55
15	1.35	3.06	1.91	1.59	-------	4.40	3.92	1.10	2.07	.18	.00	.15
16	1.19	3.42	1.75	1.71	-------	4.05	4.35	1.12	1.95	.15	—.10	—.05
17	1.16	3.56	1.69	3.08	-------	3.55	4.08	1.12	1.87	.13	—.14	—.20
18	1.14	5.33	3.12	-------	-------	3.10	6.06	1.11	2.97	.54	—.20	—.20
19	1.11	5.72	4.02	-------	-------	2.89	5.88	1.40	2.45	.94	.20	—.20
20	1.60	5.62	3.30	-------	-------	2.80	5.49	2.87	2.09	.99	.25	—.30
21	1.97	4.95	3.01	-------	6.46	2.72	4.55	2.89	1.70	.49	.30	—.40
22	1.87	4.33	2.68	-------	6.00	2.50	3.78	2.62	1.55	.19	.14	—.40
23	1.62	3.94	2.29	-------	5.55	2.18	3.45	2.33	1.40	.10	.00	—.40
24	1.50	4.10	2.67	-------	5.01	2.13	3.10	2.17	1.30	.09	.04	—.40
25	1.38	4.52	3.25	-------	3.28	2.25	2.87	2.09	1.01	.00	.18	—.40
26	1.30	4.31	2.92	-------	2.81	2.53	2.71	2.05	.90	.00	.15	—.40
27	1.24	5.21	2.48	-------	2.18	2.72	2.54	2.25	.87	.00	1.05	—.40
28	1.06	6.45	2.29	-------	2.50	6.16	2.40	1.75	.90	.00	.50	—.40
29	1.02	5.60	2.25	-------	-------	7.05	2.09	1.59	1.11	—.10	.28	—.40
30	1.01	4.78	2.05	-------	-------	5.97	1.95	1.42	1.10	—.10	.20	—.40
31	1.14	-------	1.71	-------	-------	5.81	-------	1.25	-------	—.10	.19	-------

Note.—Stage-discharge relation Dec. 29 to Jan. 3 and Jan. 8 to Feb. 25 affected by ice. Gage height Jan. 18 to Feb. 20 not observed.

Daily discharge, in second-feet, of Clarion River near Clarion, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,120	920	3,900	700	650	1,250	10,100	900	585	445	206	206
2	1,120	6,390	3,110	600	950	1,160	8,340	885	560	425	244	206
3	850	6,160	3,260	600	1,500	1,120	5,930	850	754	425	316	165
4	785	3,570	2,560	1,080	2,000	1,040	4,850	88	1,730	488	286	165
5	818	2,830	2,300	2,000	1,700	1,040	4,260	1,080	1,040	585	258	195
6	754	2,560	2,180	3,410	1,300	1,160	3,260	1,000	920	465	231	316
7	694	2,560	1,840	1,950	1,100	3,260	2,970	960	1,160	405	218	244
8	665	1,840	1,730	1,500	1,100	6,860	2,830	885	1,080	332	272	184
9	638	1,340	1,430	1,200	1,000	4,260	2,430	818	850	286	301	184
10	694	2,180	1,340	1,000	1,000	3,260	2,430	694	1,000	272	425	165
11	638	2,970	1,250	900	1,200	3,900	2,690	665	1,840	258	286	165
12	610	2,430	1,250	800	2,000	6,390	3,260	665	2,060	231	231	165
13	585	2,300	1,340	800	1,700	4,450	2,970	610	1,950	231	206	165
14	850	2,060	1,250	750	1,300	3,900	2,970	530	1,430	218	184	332
15	694	2,300	1,080	700	1,000	4,260	3,410	560	1,250	231	184	218
16	610	2,690	960	700	700	3,570	4,260	560	1,120	218	165	174
17	585	2,970	920	750	600	2,970	3,730	500	1,040	218	156	148
18	585	6,160	2,300	900	600	2,300	8,090	560	2,180	332	148	148
19	560	7,100	3,570	1,200	700	2,060	7,590	722	1,530	488	231	148
20	850	6,860	2,560	1,000	900	1,950	6,620	2,060	1,250	510	244	132
21	1,120	5,490	2,180	1,700	1,200	1,840	4,650	2,060	920	316	258	116
22	1,040	4,080	1,840	1,500	1,500	1,630	3,260	1,730	818	231	218	116
23	850	3,410	1,430	1,000	2,000	1,340	2,690	1,430	722	206	184	116
24	785	3,730	1,840	800	2,600	1,250	2,300	1,340	665	206	195	116
25	722	4,450	2,430	700	2,200	1,340	2,060	1,250	510	184	231	116
26	665	4,080	2,060	650	1,950	1,630	1,840	1,160	465	184	218	116
27	638	5,930	1,630	600	1,340	1,840	1,630	1,340	445	184	535	116
28	535	8,840	1,430	600	1,630	8,340	1,530	960	465	184	316	116
29	510	6,860	1,200	600	-------	10,400	1,250	850	560	165	258	116
30	510	5,060	1,000	600	-------	7,840	1,120	722	560	165	231	116
31	585	-------	850	600	-------	7,340	-------	638	-------	165	231	-------

Note.—Discharge Dec. 29 to Jan. 3 and Jan. 8 to Feb. 25 estimated, because of ice from weather records, study of gage height graph and comparison with similar studies for French Creek at Carlton, Tionesta Creek at Butler Bridge, Red Bank Creek at Saint Charles and Mahoning Creek near Dayton.

Monthly discharge of Clarion River near Clarion, for the year ending Sept. 30, 1922

(Drainage area 930 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,120	510	731	0.786	0.91
November	8,840	920	4,000	4.30	4.80
December	3,900	850	1,870	2.01	2.32
January	3,410	600	1,040	1.12	1.29
February	2,600	600	1,340	1.44	1.50
March	10,400	1,040	3,390	3.65	4.21
April	10,160	1,120	3,840	4.13	4.61
May	2,060	560	968	1.04	1.20
June	2,180	445	1,050	1.13	1.26
July	585	165	298	.320	.37
August	535	148	247	.266	.31
September	332	116	166	.178	.20
The Year	10,400	116	1,570	1.69	22.92

OHIO BASIN—STATION NO. 11

RED BANK CREEK AT SAINT CHARLES

Location.—At single-span steel railroad bridge, Saint Charles, Clarion County.

Drainage Area.—540 square miles.

Records Available.—October 19, 1909, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Forest S. Bish. Elevation of gage zero 976.24 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of rocks and fairly regular. Control is at the first of a series of riffles, where the bed is composed of large boulders and ledge, about 200 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 8.50 feet observed at 6.30 a. m. November 2 (discharge, about 10,900 second-feet); minimum, 0.75 foot on September 28 and at 5 p. m. September 30 (discharge, 20 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 1,000 second-feet and fairly well defined between 1,000 and 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Red Bank Creek at Saint Charles, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
29	Dec. 31	C. B. McElrath	2.19	489
30	July 23	H. L. Landis	.99	50.8

Daily Mean Gage Height, in feet, of Red Bank Creek at Saint Charles, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.21	5.50	4.42	2.15	1.74	2.70	4.42	2.15	1.60	1.63	1.20	1.20
2	2.10	7.87	4.25	2.05	1.92	2.73	4.09	2.01	1.53	1.56	1.48	1.18
3	2.01	5.90	3.72	2.02	2.45	2.40	3.84	2.05	1.91	1.66	1.74	1.14
4	2.02	5.05	3.48	2.34	2.26	2.27	3.69	2.03	2.28	1.69	1.68	1.18
5	2.04	4.41	3.34	3.77	2.35	2.63	3.56	2.11	2.14	1.62	1.45	1.16
6	2.01	3.98	3.12	3.47	2.18	2.81	3.64	2.15	2.10	1.61	1.17	1.15
7	2.02	3.75	3.02	3.17	2.20	4.50	3.50	1.95	2.03	1.52	1.72	1.08
8	2.00	3.32	2.65	2.97	2.11	4.83	3.36	1.95	1.94	1.51	1.68	1.06
9	2.01	2.71	2.62	2.68	2.00	3.62	3.26	2.03	2.07	1.43	1.72	1.11
10	1.92	3.02	2.48	2.66	2.04	3.41	2.86	2.14	2.28	1.36	1.65	1.13
11	1.96	2.82	2.40	2.59	2.24	5.81	2.82	2.13	2.72	1.33	1.56	1.16
12	1.88	2.62	2.52	2.35	2.79	4.94	3.14	1.95	2.23	1.27	1.49	1.16
13	1.82	2.50	2.68	2.19	2.78	4.40	3.22	1.88	2.13	1.21	1.32	1.12
14	1.82	2.68	2.58	2.09	2.44	4.15	3.53	1.81	2.16	1.20	1.22	1.11
15	1.78	2.82	2.42	2.03	2.26	3.80	5.64	1.73	2.13	1.17	1.20	1.14
16	1.72	2.94	2.31	2.08	2.16	3.66	5.44	1.65	2.11	1.23	1.19	1.15
17	1.76	3.30	2.45	2.03	1.93	3.60	4.71	1.61	2.14	1.20	1.16	1.19
18	1.72	4.29	3.30	2.12	2.50	3.40	5.23	1.55	2.08	1.21	1.20	1.16
19	1.70	5.28	3.32	3.37	3.68	3.35	4.52	1.55	2.00	1.21	1.30	1.14
20	1.80	4.83	3.22	3.50	3.62	2.95	4.39	1.79	1.87	1.17	1.39	1.06
21	1.92	4.33	3.22	3.10	3.45	2.69	4.29	2.59	1.74	1.13	1.37	1.13
22	1.88	4.05	3.24	2.57	3.24	2.53	4.26	2.54	1.59	1.15	1.26	1.11
23	1.76	3.65	3.50	2.18	3.41	2.46	4.13	2.51	1.50	1.16	1.24	1.03
24	1.88	4.08	3.82	2.08	3.42	2.40	3.81	2.44	1.39	1.19	1.22	.87
25	1.82	4.24	3.81	2.07	3.35	2.46	3.61	2.47	1.51	1.19	1.13	.85
26	1.81	5.05	3.60	2.00	3.31	2.35	3.28	2.30	1.57	1.20	1.14	.93
27	1.70	5.47	3.38	2.05	2.83	2.64	3.15	2.13	1.63	1.18	1.12	.87
28	1.72	6.80	3.22	1.96	2.75	5.27	3.15	2.02	1.75	1.20	1.18	.75
29	1.69	6.44	2.82	1.86	-------	5.80	2.95	1.94	1.69	1.19	1.16	.89
30	1.60	5.27	2.42	1.82	-------	5.06	2.43	1.93	1.59	1.16	1.17	.77
31	1.91	-------	2.21	1.78	-------	4.66	-------	1.67	-------	1.18	1.16	-------

Note.—Stage-discharge relation Jan. 10-14 and 24-28 affected by ice.

Daily discharge, in second-feet, of Red Bank Creek at Saint Charles, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	466	4,480	2,630	441	261	760	2,630	441	207	224	95	95
2	416	9,540	2,330	392	322	793	2,190	368	191	191	169	90
3	368	5,250	1,670	368	606	576	1,790	392	322	224	261	81
4	368	3,580	1,440	548	466	493	1,670	592	520	242	242	90
5	392	2,630	1,230	1,790	548	728	1,550	416	441	207	160	86
6	368	2,050	1,050	1,440	466	826	1,550	441	416	207	88	84
7	368	1,790	970	1,140	466	2,780	1,440	345	392	175	242	68
8	368	1,230	728	932	416	3,250	1,330	345	345	175	242	64
9	368	760	696	760	368	1,550	1,230	392	392	154	242	74
10	322	970	635	700	392	1,330	860	441	520	135	224	79
11	345	826	576	600	493	5,050	826	441	760	128	191	86
12	322	696	635	500	826	3,410	1,050	345	493	113	172	86
13	280	635	760	440	826	2,630	1,140	322	441	97	125	77
14	280	760	696	420	606	2,330	1,440	280	441	95	100	74
15	280	826	576	392	493	1,790	4,670	261	441	88	95	81
16	242	932	500	416	441	1,670	4,290	224	416	103	93	84
17	261	1,230	606	392	345	1,550	3,090	207	441	95	86	93
18	242	2,480	1,230	416	635	1,330	3,930	191	416	97	95	86
19	242	4,110	1,230	1,330	1,670	1,330	2,780	191	368	97	120	81
20	280	3,250	1,140	1,440	1,550	932	2,630	280	301	88	142	64
21	322	2,480	1,140	1,050	1,330	760	2,480	696	261	79	138	79
22	322	2,050	1,140	666	1,140	666	2,480	66	207	84	110	74
23	261	1,550	1,440	466	1,330	606	2,190	635	175	86	105	58
24	322	2,190	1,790	420	1,330	576	1,790	606	142	93	100	33
25	280	2,330	1,790	360	1,330	606	1,550	606	175	93	79	51
26	280	3,580	1,550	360	1,230	548	1,230	520	191	95	81	41
27	242	4,480	1,330	360	860	728	1,140	441	224	90	77	33
28	242	7,110	1,140	340	793	4,110	1,140	368	261	95	90	20
29	242	6,270	826	501	-------	5,050	932	345	242	93	86	76
30	207	4,110	576	280	-------	3,750	606	345	207	86	88	22
31	322	-------	466	280	-------	3,090	-------	224	-------	90	86	-------

Note.—Discharge Jan. 10-14 and 24-28 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Blacklick Creek at Blacklick, Oil Creek near Rouseville, Clarion River near Clarion, Mahoning Creek near Dayton and West Branch Susquehanna River at Bower.

Monthly discharge of Red Bank Creek at Saint Charles, for the year ending Sept. 30, 1922

(Drainage area 540 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	466	207	310	0.574	0.66
November	9,540	635	2,810	5.20	5.80
December	2,630	466	1,110	2.06	2.38
January	1,790	280	637	1.18	1.36
February	1,670	261	770	1.43	1.49
March	5,050	493	1,790	3.31	3.82
April	4,670	606	1,920	3.56	3.97
May	696	191	392	.726	.84
June	760	142	345	.639	.71
July	242	79	126	.233	.27
August	261	77	136	.252	.29
September	95	20	68.3	.126	.14
The Year	9,540	20	865	1.60	21.73

OHIO BASIN—STATION NO. 12

MAHONING CREEK NEAR DAYTON

Location.—At single-span steel highway bridge, known as Independence Bridge, about three miles northwest of Dayton, Armstrong County.

Drainage Area.—322 square miles.

Records Available.—August 12, 1916, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by J. T. Mathews.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control for low stages is at the first of a series of riffles about 50 feet below gage; practically permanent; for high stages a dam about one mile below the station.

Extremes of Discharge.—Maximum stage during the year, 7.90 feet observed at 4 p. m. April 15 (discharge, about 6,780 second-feet); minimum, 1.56 feet from 4 p. m. September 25 to 8 a. m. September 26 (discharge, 16 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 40 and 1,500 second-feet. Gage read to tenths twice daily to July 24; to hundredths twice daily since that date. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for extreme stages when they are fair.

The following discharge measurement was made by C. B. McElrath: No. 14, Dec. 30; Gage height, 2.79 feet; discharge, 441 second-feet.

Daily Mean Gage Height, in feet, of Mahoning Creek near Dayton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.4	4.65	4.2	2.85	3.35	2.80	4.45	2.30	1.90	2.20	1.96	1.72
2	2.3	7.1	3.85	4.05	4.1	2.80	4.10	2.20	2.25	3.05	2.17	1.71
3	2.2	4.85	3.7	4.15	6.8	2.60	3.70	2.20	2.90	3.00	2.03	1.72
4	2.25	3.85	3.3	4.3	5.65	2.60	3.55	2.35	2.35	2.80	1.94	1.71
5	2.3	3.45	3.2	4.05	5.0	2.95	3.35	2.40	2.30	2.35	1.85	1.71
6	2.2	3.15	3.05	3.7	4.55	3.55	3.15	2.55	2.15	2.10	1.83	1.68
7	2.15	2.9	2.95	3.2	4.0	4.90	3.10	2.60	2.05	2.10	1.81	1.67
8	2.15	2.8	2.9	3.05	3.55	4.55	3.00	2.45	2.00	2.05	1.88	1.64
9	2.2	2.65	2.8	3.05	3.3	4.05	2.90	2.30	2.95	1.90	2.09	1.66
10	2.05	2.95	2.7	2.9	4.0	3.70	2.90	2.20	4.45	1.90	2.11	1.61
11	2.1	3.05	2.7	2.8	4.5	4.20	2.95	2.20	3.45	1.80	1.89	1.66
12	2.1	2.95	2.85	3.15	5.1	4.15	3.05	2.20	3.00	1.70	1.82	1.72
13	2.0	3.15	3.1	4.8	5.4	3.80	3.00	2.10	2.65	1.70	1.77	1.75
14	2.0	3.25	2.9	4.5	4.0	3.55	3.65	2.10	2.45	1.75	1.75	1.75
15	2.0	3.75	2.75	4.65	3.6	3.90	6.80	2.10	2.35	1.70	1.74	1.66
16	2.0	3.65	2.7	4.15	3.0	3.60	5.25	2.10	2.20	1.70	1.66	1.68
17	2.2	4.1	2.7	3.45	2.5	3.25	4.40	2.00	2.25	1.75	1.71	1.64
18	2.0	5.15	3.2	3.45	2.5	3.10	4.10	2.15	2.30	2.10	1.70	1.63
19	2.1	4.6	3.4	3.85	3.55	3.00	3.60	2.40	2.15	2.40	1.80	1.65
20	2.3	4.45	3.15	3.7	4.4	2.90	3.45	2.80	2.05	1.95	2.07	1.64
21	2.6	3.95	3.0	3.25	3.75	2.85	3.10	2.70	2.00	1.80	1.92	1.64
22	2.45	3.6	2.8	3.1	3.25	2.70	3.05	2.60	2.00	1.70	1.83	1.65
23	2.3	3.35	3.35	2.75	3.4	2.60	2.85	2.50	1.90	1.70	1.75	1.65
24	2.2	3.35	4.15	3.55	3.5	2.80	2.75	2.40	1.90	1.9	1.74	1.61
25	2.2	3.8	4.35	3.4	3.2	2.85	2.70	2.30	1.85	1.95	1.70	1.57
26	2.1	4.0	3.8	3.0	3.0	2.80	2.60	2.20	1.85	1.80	1.85	1.57
27	2.1	5.15	3.45	3.05	3.05	3.20	2.55	2.10	1.95	1.78	2.01	1.61
28	2.1	6.2	3.15	3.25	3.1	4.70	2.40	2.10	2.10	1.82	1.87	1.63
29	2.0	6.85	3.0	3.1	-------	4.50	2.40	2.00	2.05	1.77	1.81	1.64
30	2.0	4.95	2.85	3.15	-------	4.20	2.30	2.00	1.95	1.77	1.75	1.63
31	2.3	-------	2.85	3.15	-------	4.35	-------	1.90	-------	1.72	1.74	-------

Note.—Stage-discharge relation Dec. 31 to Jan. 4. Jan. 7-18 and Jan. 23 to Feb. 19 affected by ice.

Daily discharge, in second-feet, of Mahoning Creek near Dayton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	230	2,000	1,590	360	360	440	1,790	190	70	150	82	38
2	190	5,500	1,250	320	600	440	1,490	150	162	595	141	36
3	150	2,330	1,110	320	700	330	1,110	150	500	560	99	38
4	170	1,250	775	440	460	330	977	210	218	440	78	35
5	190	892	700	1,390	300	530	813	230	190	210	60	36
6	150	665	595	1,110	260	977	665	305	135	120	56	32
7	135	500	530	650	220	2,330	630	330	105	120	52	30
8	135	440	500	460	200	2,000	560	255	90	105	66	26
9	150	358	440	320	190	1,390	500	190	530	70	117	29
10	105	530	385	280	200	1,110	500	150	1,790	70	123	22
11	120	595	385	220	280	1,590	530	150	892	50	68	29
12	120	530	470	200	650	1,590	595	150	560	35	54	38
13	90	665	630	200	950	1,200	560	120	358	35	46	42
14	90	738	500	190	500	977	1,060	120	255	42	42	42
15	90	1,160	413	190	360	1,300	4,990	120	210	35	41	29
16	90	1,060	385	200	260	1,020	2,820	120	150	35	29	32
17	150	1,490	385	220	220	738	1,790	90	170	42	36	26
18	90	2,690	700	300	220	630	1,490	135	190	120	35	24
19	120	2,000	850	1,250	360	560	1,020	230	135	230	50	28
20	190	1,790	665	1,110	1,790	500	892	440	105	80	111	26
21	330	1,340	560	738	1,160	470	630	385	90	50	74	26
22	255	1,020	440	630	738	385	595	330	90	35	56	28
23	190	813	813	380	850	330	470	280	70	35	42	28
24	150	813	1,490	300	935	440	413	230	70	70	41	22
25	150	1,200	1,790	260	700	470	385	190	60	80	35	17
26	120	1,390	1,200	220	560	440	330	150	60	50	60	17
27	120	2,690	892	220	595	700	395	120	80	47	93	22
28	120	4,090	665	200	630	2,110	230	120	120	54	64	24
29	90	4,990	560	200	-------	1,890	230	90	105	46	52	26
30	90	2,330	470	200	-------	1,590	190	90	80	46	42	24
31	198	-------	420	260	-------	1,690	-------	70	-------	38	41	-------

Note.—Discharge Dec. 31 to Jan. 4, Jan. 7-18 and Jan. 23 to Feb. 19 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Crooked Creek at Hileman's Farm, Blacklick Creek at Blacklick and West Branch Susquehanna River at Bower.

Monthly discharge of Mahoning Creek near Dayton, for the year ending Sept. 30, 1922

(Drainage area 322 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	330	90	147	0.457	0.53
November	5,500	358	1,600	4.97	5.55
December	1,790	385	728	2.26	2.61
January	1,390	190	430	1.34	1.55
February	1,790	190	544	1.69	1.76
March	2,330	330	984	3.06	3.53
April	4,990	190	952	2.96	3.30
May	440	70	190	.590	.68
June	1,790	60	255	.792	.88
July	595	35	119	.370	.43
August	141	29	64.1	.199	.23
September	42	17	29.1	.090	.10
The Year	5,500	17	501	1.56	21.15

OHIO BASIN—STATION NO. 13

ALLEGHENY RIVER AT KITTANNING

Location.—At five-span steel highway bridge, Market Street, Kittanning, Armstrong County.

Drainage Area.—9,010 square miles.

Records Available.—August 18, 1904, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by S. C. Carr, W. D. Stoner and H. L. Sheakley. Elevation of gage zero 764.45 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel. Control is at a riffle about 500 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from Franklin record, 13.5 feet April 1 (discharge, about 65,000 second-feet); minimum, 1.40 feet at 5 a. m. September 30 (discharge, 880 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 800 and 250,000 second-feet. Gage read to tenths twice daily October 1 to May 21; to hundredths since that date. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by H. L. Landis: No. 56, July 24: Gage height, 2.36 feet; discharge, 2,230 second-feet.

Daily Mean Gage Height, in feet, of Allegheny River at Kittanning, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.00	4.30	9.92						3.76	5.32	2.18	2.58
2	4.00	10.40	8.85						3.56	5.46	3.12	2.38
3	3.95	13.05	8.35						3.56	5.17	3.05	2.33
4	3.75	11.60	8.15						4.04	5.18	2.93	2.24
5	3.55	10.05	7.80						4.21	4.74	2.97	2.84
6	3.50	8.85							4.04	4.70	2.81	2.85
7	3.95	8.25							3.96	4.42	2.71	2.66
8	4.00	7.45							3.86	4.00	2.66	2.35
9	3.75	6.90							3.77	3.59	2.74	2.11
10	4.25	6.65							4.34	3.40	3.37	2.02
11	5.30	7.45							5.68	3.22	4.58	1.95
12	4.95	8.10							6.04	3.00	3.74	1.93
13	5.05	7.85							9.15	2.90	3.13	1.89
14	6.85	7.40							8.37	2.72	2.78	1.94
15	6.60	7.40							6.86	2.64	2.49	2.05
16	5.55	7.70							5.67	2.63	2.30	2.30
17	4.85	8.00							4.96	2.57	2.09	2.32
18	4.35	9.90							4.54	2.54	2.01	2.12
19	4.05	12.10							4.87	2.99	2.09	2.00
20	4.00	13.00							4.58	3.09	2.23	1.86
21	4.05	12.50							4.24	2.96	2.25	1.78
22	4.35	11.05						5.97	3.91	2.83	2.20	1.69
23	4.40	9.65						5.70	3.62	2.57	2.29	1.65
24	4.40	8.85						5.24	3.38	2.41	2.18	1.62
25	4.15	9.10						4.84	3.40	2.22	1.95	1.57
26	3.90	9.65						4.90	3.30	2.13	3.43	1.49
27	3.70	10.60						5.65	3.20	2.03	4.12	1.49
28	3.55	11.45						5.31	3.22	1.99	3.91	1.45
29	3.40	12.35						4.83	3.15	1.95	3.76	1.43
30	3.25	11.25						4.36	3.79	2.03	3.25	1.41
31	3.25							4.02		2.04	2.83	

Note.—Gage height Dec. 6 to Jan. 20 not observed; Jan. 21 to May 21 unsatisfactory.

Daily discharge, in second-feet, of Allegheny River at Kittanning, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,840	6,660	37,900						5,340	10,500	1,920	2,640
2	5,840	41,400	30,400						4,850	11,400	3,720	2,260
3	5,840	60,800	27,800						4,850	10,100	3,490	2,100
4	5,340	50,000	26,400						5,840	10,100	3,270	2,000
5	4,850	38,600	23,900						6,380	7,980	3,490	3,060
6	4,620	30,400							5,840	7,980	3,060	3,060
7	5,840	26,400							5,840	6,960	2,850	2,850
8	5,840	21,400							5,580	5,840	2,850	2,160
9	5,340	18,400							5,340	4,850	2,850	1,760
10	6,380	16,800							6,660	4,390	4,390	1,600
11	10,500	21,400							12,400	3,940	7,600	1,530
12	9,200	25,800							13,800	3,490	5,080	1,530
13	9,200	23,900							33,000	3,270	3,720	1,460
14	17,800	21,400							27,800	2,850	3,060	1,530
15	16,800	21,400							18,400	2,640	2,440	1,680
16	11,900	23,300							12,400	2,640	2,080	2,080
17	8,380	25,200							9,200	2,640	1,760	2,080
18	6,960	37,900							7,260	2,440	1,600	1,760
19	5,840	53,800							8,780	3,490	1,760	1,600
20	5,840	60,800							7,600	3,720	2,000	1,400
21	5,840	56,800							6,380	3,490	2,000	1,340
22	6,960	45,700						13,800	5,580	3,060	1,920	1,220
23	6,960	35,800						12,400	4,850	2,640	2,080	1,160
24	6,960	30,400						10,100	4,390	2,260	1,920	1,100
25	6,380	32,400						8,380	4,390	1,920	1,530	1,040
26	5,580	35,800						8,780	4,160	1,840	4,390	900
27	5,080	42,900						11,900	3,940	1,680	6,100	900
28	4,850	48,600						10,500	3,940	1,600	5,580	935
29	4,390	56,100						8,380	3,940	1,530	5,340	935
30	3,940	47,100						6,960	5,340	1,680	3,940	880
31	3,940							5,840		1,680	3,060	

Note.—Discharge not computed Dec. 6 to Jan. 20, because of no gage height record, and Jan. 21 to May 21, because of unsatisfactory gage height record.

Monthly discharge of Allegheny River at Kittanning, for the year ending Sept. 30, 1922

(Drainage area 9,010 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	17,800	3,940	7,070	0.785	0.91
November	60,800	6,660	35,200	3.97	4.43
December 1-5	37,900	23,900	29,300	3.25	.60
January					
February					
March					
April					
May 22-31	13,800	5,840	9,700	1.08	.40
June	33,000	3,940	8,470	.940	1.05
July	11,400	1,530	4,340	.482	.56
August	7,600	1,530	3,250	.361	.42
September	3,060	880	1,690	.188	.21
The Year					

OHIO BASIN—STATION NO. 14

CROOKED CREEK AT HILEMAN'S FARM

Location.—At single-span steel highway bridge, about three and one half miles south of Ford City, at Hileman's Farm, Armstrong County.

Drainage Area.—279 square miles.

Records Available.—October 16, 1909, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by D. G. Hileman and D. S. Smeltzer.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Left bank is high and not subject to overflow; right is low and begins to overflow at a stage of about 8 feet. Bed is composed of gravel and rock. Control is at a riffle about 300 feet below gage; practically permanent.

Extremes and Discharge.—Maximum stage during the year, estimated from hydrograph, 9.28 feet at 10 a. m. April 15 (discharge, about 9,000 second-feet); minimum, 0.68 foot on September 28 (discharge, 3.0 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 500 second-feet and fairly well defined between 500 and 5,500 second-feet. Gage read twice daily to tenths to July 25 and to hundredths since that date. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Crooked Creek at Hileman's Farm, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
30	Dec. 29	C. B. McElrath	2.78	452
31	July 25	do	1.72	106
32	25	H. L. Landis	1.70	95.3

Daily Mean Gage Height, in feet, of Crooked Creek at Hileman's Farm, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	3.85	3.95	2.4	2.5	2.8	4.55	1.9	1.3	1.6	2.02	1.00
2	1.8	7.05	3.4	2.25	2.7	2.8	3.95	1.8	1.35	1.6	1.82	1.00
3	1.7	4.45	3.35	2.5	3.35	2.6	3.4	1.75	1.85	3.55	2.00	1.00
4	1.8	3.35	3.0	2.75	2.65	2.6	3.15	1.8	1.85	2.95	1.96	1.08
5	1.85	2.95	2.85	3.55	2.3	2.95	2.85	2.0	1.6	2.3	1.95	.98
6	1.7	2.6	2.8	3.3	2.3	3.7	2.75	2.0	1.5	2.0	1.67	.80
7	1.6	2.5	2.7	2.85	2.2	5.45	2.5	2.0	1.5	1.8	1.50	.86
8	1.65	2.35	2.7	2.5	2.2	5.3	2.4	2.0	1.8	1.65	1.55	.85
9	1.7	2.45	2.7	2.65	2.1	3.95	2.5	1.9	1.6	1.5	1.55	.82
10	1.7	3.2	2.6	2.5	2.0	3.5	2.4	1.8	1.6	1.4	1.45	.82
11	1.6	2.55	2.6	2.4	2.0	3.75	2.4	1.8	2.1	1.4	1.40	.80
12	1.6	2.65	2.7	2.1	2.45	3.9	2.4	1.7	3.25	1.3	1.30	.94
13	1.5	3.0	2.8	2.1	3.9	3.45	2.3	1.6	2.4	1.3	1.20	.94
14	1.5	2.95	2.8	2.1	2.85	3.3	2.95	1.6	2.0	1.2	1.10	1.04
15	1.4	3.55	2.7	2.2	2.5	3.55	8.5	1.55	1.85	1.1	1.10	1.07
16	1.4	3.5	2.6	2.4	2.7	3.25	5.6	1.6	1.75	1.2	1.02	1.02
17	1.4	3.9	2.5	2.1	2.3	2.85	4.0	1.6	1.6	1.0	1.00	.86
18	1.6	4.65	2.9	2.1	2.25	2.7	3.7	1.65	1.6	2.65	1.00	.82
19	1.4	4.2	3.0	2.85	4.2	2.6	3.15	1.95	1.65	2.75	1.52	.78
20	1.7	4.1	2.8	3.8	5.15	2.5	2.95	2.3	1.5	2.1	1.34	.76
21	2.0	3.5	2.8	3.45	3.85	2.4	2.75	2.1	1.45	1.75	1.30	.76
22	2.0	3.2	2.5	3.35	3.35	2.25	2.55	2.0	1.2	1.6	1.20	.76
23	1.8	2.9	2.5	2.75	3.45	2.1	2.5	1.9	1.15	1.55	1.12	.76
24	1.7	2.95	4.75	3.25	3.2	2.1	2.35	1.8	1.0	2.0	1.10	.76
25	1.7	3.6	5.0	3.5	2.85	2.2	2.25	1.7	1.1	1.80	1.10	.74
26	1.6	4.1	4.0	3.05	2.65	2.2	2.2	1.6	1.0	1.50	1.20	.72
27	1.5	5.85	3.5	2.9	3.0	2.5	2.1	1.75	1.0	1.40	1.12	.70
28	1.5	7.0	3.0	2.8	2.9	4.45	2.05	1.6	1.5	1.30	1.00	.68
29	1.4	7.8	2.75	2.7	-------	4.2	1.9	1.5	1.5	1.10	.96	.78
30	1.5	5.1	2.5	2.5	-------	3.8	1.9	1.5	1.75	1.10	.94	.74
31	1.8	-------	2.6	2.4	-------	4.1	-------	1.4	-------	1.10	.94	-------

Note.—Stage-discharge relation Jan. 9-12, 15-17, Jan. 23 to Feb. 4, Feb. 12-16 and 19-25 affected by ice.

Daily discharge, in second-feet, of Crooked Creek at Hileman's Farm, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	120	1,340	1,520	330	240	570	2,090	120	27	59	157	11
2	95	5,250	1,010	250	360	570	1,520	95	29	58	100	11
3	75	1,890	970	390	500	450	1,010	85	102	1,090	150	11
4	95	970	710	540	380	450	815	95	108	675	138	14
5	108	675	605	1,090	275	675	605	150	59	275	135	10
6	75	450	570	930	275	1,250	540	150	46	150	70	5.1
7	59	390	510	605	225	2,950	390	150	46	95	46	6.5
8	67	302	510	390	225	2,840	330	150	95	67	52	6.2
9	75	360	510	320	185	1,520	390	120	59	46	52	5.5
10	75	850	450	280	150	1,090	330	95	59	35	40	5.5
11	59	420	450	220	150	1,340	330	95	185	35	35	5.1
12	59	480	510	200	220	1,430	330	75	890	27	27	8.8
13	46	710	570	185	850	1,050	275	59	330	27	20	8.8
14	46	675	570	185	480	930	675	59	150	20	15	13
15	35	1,090	510	180	320	1,170	7,550	52	108	15	15	14
16	35	1,090	450	180	280	890	3,190	59	85	20	12	12
17	35	1,430	390	180	275	605	1,520	59	59	11	11	6.5
18	59	2,190	640	185	255	510	1,250	67	59	480	11	5.5
19	35	1,700	710	605	550	450	815	135	67	540	49	4.7
20	75	1,610	570	1,340	1,100	390	675	275	46	185	50	4.3
21	150	1,090	570	1,050	1,000	330	540	185	40	85	27	4.3
22	150	850	390	700	900	250	420	150	20	59	20	4.3
23	95	640	390	500	800	185	390	120	18	52	16	4.3
24	75	675	2,190	300	650	185	302	95	11	150	15	4.3
25	75	1,170	2,510	240	550	225	250	75	15	95	15	4.0
26	59	1,610	1,520	200	480	225	225	59	11	46	20	3.6
27	46	3,430	1,090	200	710	390	185	85	11	35	16	3.3
28	46	5,100	710	200	640	1,990	168	59	46	27	11	3.0
29	35	6,360	540	200	-------	1,700	120	46	46	15	9.5	4.7
30	46	2,620	390	200	-------	1,340	120	46	85	15	8.8	4.0
31	91	-------	450	220	-------	1,610	-------	35	-------	15	8.8	-------

Note.—Discharge Jan. 9-12, 15-17, Jan. 22 to Feb. 4, Feb. 12-16 and 19-25 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Blacklick Creek at Blacklick, Connoquenessing Creek at Hazen and West Branch Susquehanna River at Bower.

Monthly discharge of Crooked Creek at Hileman's Farm, for the year ending Sept. 30, 1922

(Drainage area 279 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	150	35	70.8	0.254	0.29
November	6,360	302	1,580	5.66	6.32
December	2,510	390	758	2.72	3.14
January	1,340	180	406	1.46	1.68
February	1,100	150	465	1.67	1.74
March	2,950	185	954	3.42	3.94
April	7,550	120	912	3.27	3.65
May	275	35	100	.358	.41
June	890	11	97.1	.348	.39
July	1,090	11	145	.520	.60
August	157	8.8	43.0	.154	.18
September	14	3.0	6.94	.025	.03
The Year	7,550	3.0	459	1.65	22.37

OHIO BASIN—STATION NO. 15

STONY CREEK AT JOHNSTOWN

Location.—At single-span steel highway bridge, Poplar Street, Johnstown, Cambria County, about one and one-half miles above the confluence of Stony Creek and the Little Conemaugh River.

Drainage Area.—468 square miles.

Records Available.—July 2, 1913, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Herbert F. Reitz and Edmund F. Miller. Elevation of gage zero 1,154.0 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Control for low water is at a riffle, where the bed is composed of gravel and small boulders, about 100 feet below gage; practically permanent. Control for high stages is at a riffle, where the bed is composed of gravel and large boulders, about 1,300 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph 13.7 feet at 7 p. m. November 28 (discharge, 16,400 second-feet); minimum, 0.85 foot at 6 p. m. September 21 and 24 (discharge, 22 second-feet).

Ice.—Stage-discharge relation usually affected by ice for short periods.

Diversions.—A dam one mile above the mouth of Quemahoning Creek creates a reservoir having a capacity of 1,740,000,000 cubic feet, from which water is carried through a conduit to the plant of the Cambria Steel Company at Johnstown, where it is returned to the stream below the gaging station.

Accuracy.—Stage-discharge relation probably permanent. Rating curve fairly well defined below 1,000 second-feet and well defined from 1,000 to 8,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Cooperation.—A record of the quantity of water diverted from the Quemahoning Reservoir is furnished by the Cambria Steel Company, Johnstown.

The following discharge measurement was made by H. L. Landis: No. 46, July 27: Gage height, 1.10 feet; discharge, 63.2 second-feet.

Daily Mean Gage Height, in feet, of Stony Creek at Johnstown, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.78	1.84	6.50	3.00	1.80	-------	6.72	2.20	1.55	1.67	1.49	1.00
2	1.72	3.01	5.98	2.78	2.34	3.00	5.57	2.10	1.52	2.03	1.51	.97
3	1.95	2.35	5.75	2.70	3.44	2.85	4.60	2.08	-------	-------	1.62	.97
4	2.52	1.88	5.08	2.80	3.06	2.78	4.28	2.10	-------	-------	1.38	.94
5	2.38	1.70	4.10	3.05	2.39	2.80	3.72	2.35	-------	-------	1.16	.93
6	2.22	1.60	3.55	3.00	2.58	3.42	3.15	2.50	1.45	1.40	1.14	.93
7	1.90	1.65	3.40	2.68	2.25	-------	2.91	2.28	1.37	1.60	1.06	.92
8	1.80	1.72	3.20	2.35	2.00	-------	2.92	2.18	1.35	1.60	1.14	.89
9	1.72	1.62	3.08	2.10	1.90	-------	2.75	2.18	1.43	1.43	1.26	.89
10	1.62	1.60	3.00	2.00	1.82	-------	2.68	2.18	1.65	1.35	1.16	.88
11	1.60	1.72	2.90	2.00	1.95	-------	2.60	2.08	-------	1.25	1.12	1.00
12	1.58	1.82	2.78	2.00	2.52	4.20	2.50	1.98	-------	1.15	.99	1.11
13	1.50	1.98	2.80	1.95	2.88	4.68	2.44	1.95	-------	1.15	1.02	.96
14	1.42	2.40	3.02	1.90	2.38	4.44	4.16	2.05	-------	1.15	.99	.90
15	1.40	2.85	3.32	1.80	1.92	6.44	7.49	2.20	1.47	1.10	1.00	.88
16	1.40	3.85	3.85	1.80	2.36	5.92	5.54	2.50	1.33	1.10	1.00	.90
17	1.50	4.10	4.50	1.80	2.88	4.58	4.60	2.75	1.25	1.16	.94	.87
18	1.45	3.78	6.22	1.99	3.00	3.92	4.55	2.87	1.15	-------	.91	.88
19	1.40	3.45	6.02	3.56	4.05	3.65	3.80	2.95	1.15	-------	.91	.89
20	1.58	3.10	5.15	4.02	5.21	3.40	3.25	3.45	1.10	-------	.97	.88
21	1.70	2.80	4.28	3.68	4.75	3.22	3.05	2.85	1.05	-------	.93	.88
22	1.50	2.70	3.62	3.39	4.00	2.90	3.00	2.45	1.05	1.05	.92	.88
23	1.40	3.15	3.88	3.00	4.00	2.58	2.95	2.10	1.05	1.10	.92	.89
24	1.40	3.62	5.90	2.68	3.75	2.70	2.80	1.95	1.05	-------	.92	.86
25	1.40	3.92	5.92	2.30	3.32	2.75	2.68	1.87	1.05	-------	.94	.86
26	1.35	4.32	5.10	2.10	3.03	2.80	2.52	1.75	1.05	1.13	.92	.87
27	1.30	6.16	4.30	2.02	-------	3.30	2.40	2.00	1.05	1.10	.89	.87
28	1.30	11.70	3.60	1.91	-------	3.88	2.40	2.05	1.30	1.06	.92	.88
29	1.30	10.25	3.25	1.90	-------	4.70	2.30	1.90	1.71	1.03	.93	.87
30	1.25	7.22	3.18	1.90	-------	4.57	2.22	1.70	-------	1.03	.92	.88
31	1.32	-------	3.02	1.80	-------	5.40	-------	1.57	-------	.99	1.04	-------

Note.—Gage heights Feb. 27 to Mar. 1, Mar. 7-11, June 3-5, 11-14, 30. July 3-5, 18-21 and 24-25 unsatisfactory.

Daily discharge, in second-feet, of Stony Creek at Johnstown, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	290	310	4,070	870	290	950	4,330	460	200	234	178	42
2	252	870	3,490	750	528	870	3,060	415	182	302	182	38
3	350	528	3,270	695	1,140	750	2,100	415	360	850	217	38
4	595	330	2,560	750	935	750	1,840	415	380	500	141	33
5	550	252	1,680	870	550	750	1,360	528	240	260	77	32
6	460	217	1,280	870	645	1,140	1,000	595	164	147	72	32
7	330	234	1,140	695	482	3,060	810	505	138	217	51	30
8	290	252	1,000	528	370	3,270	810	460	132	217	72	26
9	252	217	935	415	330	2,400	750	460	158	158	105	26
10	217	217	870	370	290	1,900	695	460	234	132	77	25
11	217	252	810	370	350	1,800	645	415	360	102	67	42
12	217	290	750	370	595	1,760	595	370	1,100	74	40	64
13	182	370	750	350	810	2,190	572	350	600	74	46	36
14	154	550	870	330	550	1,920	1,760	392	280	74	40	27
15	147	750	1,070	290	330	3,950	5,370	460	172	62	42	25
16	147	1,440	1,440	290	528	3,380	2,960	595	126	62	42	27
17	182	1,680	2,010	290	810	2,100	2,100	750	102	77	33	24
18	164	1,440	3,710	370	870	1,520	2,100	810	74	370	28	25
19	147	1,140	3,490	1,280	1,600	1,280	1,440	870	74	300	28	26
20	217	935	2,660	1,600	2,660	1,140	1,000	1,140	62	150	38	25
21	252	750	1,840	1,360	2,280	1,000	870	750	52	55	32	25
22	182	695	1,280	1,140	1,600	810	870	572	52	52	30	25
23	147	1,000	1,520	870	1,600	645	870	415	52	62	30	26
24	147	1,280	3,380	695	1,440	695	750	350	52	220	30	23
25	147	1,520	3,380	505	1,070	750	695	310	52	170	33	23
26	132	1,840	2,560	415	870	750	595	271	52	70	30	24
27	117	3,710	1,840	370	1,100	1,070	550	370	52	62	26	24
28	117	12,600	1,280	330	1,400	1,520	550	392	117	54	30	25
29	117	9,810	1,000	330	-------	2,190	505	330	252	48	32	24
30	102	4,980	1,000	330	-------	2,100	460	252	420	48	30	25
31	123	-------	870	290	-------	2,860	-------	200	-------	40	50	-------

Note.—Discharge does not include the water diverted from the Quemahoning Reservoir. Discharge Feb. 27 to Mar. 1, Mar. 7-11, June 3-5, 11-14, 30, July 3-5, 18-21 and 24-25 estimated, because of unsatisfactory gage height record, from comparison of gage height and discharge graphs with Kiskiminitas River at Avonmore, Blacklick Creek at Blacklick, Loyalhanna Creek at New Alexandria and Laurel Hill Creek at Ursina.

Monthly discharge of Stony Creek at Johnstown, for the year ending Sept. 30, 1922

(Drainage area 468 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	595	102	224	0.714	0.82
November	12,600	217	1,680	3.80	4.24
December	4,070	750	1,860	4.19	4.83
January	1,600	290	613	1.53	1.76
February	2,660	290	929	2.22	2.31
March	3,950	645	1,650	3.80	4.38
April	5,370	460	1,400	3.29	3.67
May	1,140	200	486	1.33	1.53
June	1,100	52	210	.714	.80
July	850	40	170	.532	.61
August	217	26	62.3	.226	.26
September	64	23	29.6	.199	.22
The year	12,600	23	775	1.87	25.43

Note.—Discharge does not include the water diverted from the Quemahoning Reservoir. Run-off includes the quantity of water diverted from the reservoir.

OHIO BASIN—STATION NO. 16

BLACKLICK CREEK AT BLACKLICK

Location.—At three-span steel highway bridge, about one quarter of a mile north of the Pennsylvania Railroad Station, Blacklick, Indiana County.

Drainage Area.—386 square miles.

Records Available.—August 16, 1904, to December 31, 1905, and January 8, 1907, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Carrie Kelley.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left begins to overflow at a stage of about 12.0 feet. Bed is composed of sand, gravel and boulders. Control is at a riffle about 200 feet below gage; may shift occasionally.

Extremes of Discharge.—Maximum stage during the year, 9.85 feet observed at 7 a. m. November 29 (discharge, about 11,700 second-feet); minimum, 2.02 feet 7 a. m. September 11 and on September 29 (discharge, 19 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 10,000 second-feet. Gage read twice daily to quarter tenths October 1 to July 27; to hundredths since that date. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by H. L. Landis: No. 42, July 27: Gage height, 2.61 feet; discharge, 201 second-feet.

Daily Mean Gage Height, in feet, of Blacklick Creek at Blacklick, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.50	3.65	5.35	3.15	3.10	3.75	4.46	2.69	2.53	3.23	2.78	2.20
2	2.52	5.02	5.08	3.08	3.28	3.68	4.80	2.73	2.63	3.51	2.47	2.23
3	2.72	4.25	4.52	3.05	3.58	3.48	4.29	2.68	3.73	4.95	2.69	2.17
4	2.95	3.70	4.22	3.50	3.18	3.40	4.13	2.63	3.32	4.19	3.10	2.19
5	2.86	3.48	4.15	3.88	3.05	3.52	3.93	3.44	2.85	3.63	2.75	2.18
6	2.76	3.12	4.08	3.65	2.98	4.55	3.76	3.54	2.68	3.30	2.57	2.28
7	2.60	3.05	3.78	3.38	2.90	5.60	3.56	3.28	2.69	2.93	2.55	2.19
8	2.61	2.90	3.58	3.28	2.75	4.62	3.48	3.33	2.56	2.79	2.58	2.13
9	2.66	2.98	3.42	3.32	2.78	4.10	3.30	3.16	2.98	2.43	2.56	2.10
10	2.62	2.98	3.35	3.31	2.82	3.88	3.34	3.08	3.23	2.56	2.53	2.07
11	2.60	3.25	3.45	3.22	3.10	3.55	3.29	3.16	3.67	2.44	2.35	2.11
12	2.52	3.42	3.66	3.22	3.25	3.65	3.43	2.88	5.18	2.74	2.33	2.76
13	2.50	3.32	3.95	3.12	3.22	3.80	3.68	2.86	4.05	2.53	2.29	2.42
14	2.50	3.21	3.82	3.05	3.28	4.44	4.18	2.78	3.43	2.40	2.25	2.28
15	2.48	3.60	3.65	3.15	3.48	4.46	8.22	2.76	3.16	2.38	2.25	2.15
16	2.52	4.45	3.46	3.18	3.36	3.76	5.76	2.73	2.98	2.36	2.31	2.11
17	2.40	5.51	3.36	3.05	3.15	3.54	4.73	2.70	3.13	2.52	2.25	2.13
18	2.32	4.75	4.42	3.18	3.00	3.43	4.53	2.88	2.93	4.35	2.30	2.14
19	2.45	4.35	4.05	4.40	3.64	3.39	4.16	3.13	2.78	3.54	2.75	2.09
20	2.75	4.18	3.88	4.61	4.56	3.53	3.76	3.10	2.64	2.98	2.76	2.04
21	2.92	4.05	3.71	3.95	4.22	3.66	3.64	2.98	2.60	2.62	2.39	2.07
22	2.85	3.85	3.55	3.68	4.05	3.63	3.38	3.03	2.56	2.53	2.29	2.07
23	2.72	3.65	3.88	3.45	4.12	3.46	3.33	2.79	2.43	2.62	2.27	2.06
24	2.56	3.90	5.68	3.38	3.88	3.30	3.30	2.69	2.33	3.51	2.25	2.07
25	2.40	4.41	4.95	3.05	3.65	3.43	3.36	2.73	2.33	2.93	2.20	2.05
26	2.32	4.75	4.66	3.05	3.78	3.46	3.10	3.08	2.58	2.70	2.25	2.08
27	2.40	5.70	4.40	3.08	4.08	3.98	3.03	2.98	2.94	2.61	2.25	2.06
28	2.45	7.38	4.02	3.05	3.95	5.01	2.93	2.93	2.83	2.57	2.26	2.05
29	2.44	8.87	3.88	2.95	-------	4.66	2.84	2.69	2.86	2.47	2.26	2.02
30	2.42	6.66	3.66	2.98	-------	4.43	2.76	2.62	3.16	2.43	2.21	2.04
31	2.66	-------	3.45	3.08	-------	4.60	-------	2.58	-------	2.40	2.18	-------

Note.—Stage-discharge relation Jan. 9-17 and 24-29 affected by ice.

Daily discharge, in second-feet, of Blacklick Creek at Blacklick, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	725	2,520	418	390	798	1,420	196	135	472	236	42
2	132	1,960	2,090	390	500	760	1,730	214	172	625	114	48
3	209	1,160	1,420	365	690	625	1,240	192	793	1,960	196	37
4	315	760	1,160	625	445	560	1,070	259	590	1,160	390	41
5	272	625	1,160	910	365	625	950	592	259	725	242	39
6	227	390	1,070	725	330	1,520	798	658	192	500	149	59
7	160	365	835	560	290	2,840	658	500	196	305	143	41
8	164	290	690	500	222	1,520	625	530	146	240	153	31
9	184	330	560	440	236	1,070	500	418	330	100	146	27
10	168	330	530	400	254	910	530	390	472	146	135	24
11	160	472	592	340	390	658	500	418	725	104	77	29
12	132	560	725	320	472	725	592	281	2,230	218	71	227
13	125	500	950	300	445	835	760	272	1,030	135	61	97
14	125	445	835	280	500	1,330	1,160	236	592	90	52	59
15	118	690	725	280	625	1,420	8,000	227	418	85	52	35
16	132	1,330	592	280	530	798	3,160	214	330	79	66	29
17	90	2,680	530	320	418	658	1,620	200	418	132	52	31
18	68	1,730	1,330	445	340	592	1,420	281	305	1,330	63	33
19	108	1,330	1,030	1,330	725	560	1,160	418	236	658	222	26
20	222	1,160	910	1,520	1,520	658	798	390	176	330	227	21
21	300	1,030	760	950	1,160	725	725	330	160	168	87	24
22	267	872	658	760	1,030	725	560	365	146	135	61	24
23	209	725	910	592	1,070	592	530	240	100	168	57	23
24	146	910	3,000	420	910	500	500	196	71	625	52	24
25	90	1,330	1,960	340	725	592	530	214	71	305	42	22
26	68	1,730	1,620	320	835	592	390	390	153	200	52	25
27	90	3,000	1,330	300	1,070	990	365	330	310	164	52	23
28	108	6,320	990	300	950	1,960	305	305	259	149	55	22
29	97	9,540	910	300	-------	1,620	263	196	272	114	55	19
30	97	4,860	725	330	-------	1,330	227	168	418	100	44	21
31	184	-------	592	390	-------	1,520	-------	153	-------	90	39	-------

Note.—Discharge Jan. 9-17 and 24-29 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Loyalhanna Creek at New Alexandria, Stony Creek at Johnstown, West Branch Susquehanna River at Bower, Mahoning Creek near Dayton and Crooked Creek at Hileman's Farm.

Monthly discharge of Blacklick Creek at Blacklick, for the year ending Sept. 30, 1922

(Drainage area 386 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	315	68	158	0.409	0.47
November	9,540	290	1,600	4.15	4.63
December	3,000	530	1,090	2.82	3.25
January	1,520	280	508	1.32	1.52
February	1,520	222	623	1.61	1.68
March	2,840	500	987	2.56	2.95
April	8,000	227	1,100	2.85	3.18
May	658	153	315	.816	.94
June	2,230	71	387	1.00	1.12
July	1,960	79	375	.972	1.12
August	390	39	110	.285	.33
September	227	19	40.1	.104	.12
The Year	9,540	19	606	1.57	21.31

OHIO BASIN—STATION NO. 17

LOYALHANNA CREEK AT NEW ALEXANDRIA

Location.—At single-span wooden covered highway bridge, New Alexandria, Westmoreland County.

Drainage Area.—264 square miles.

Records Available.—August 17, 1913, to August 31, 1918, and August 7, 1919, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by E. E. Huffman. Elevation of gage zero 917.26 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and do not overflow. Bed is composed of gravel and boulders. Control for low stages is at a gravel riffle about 50 feet below gage; practically permanent. Medium and high stage control is at a riffle, about 1,300 feet below gage, composed of gravel and boulders; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 10.60 feet observed at midnight November 28-29 (discharge, about 7,500 second-feet); minimum, 1.40 feet at 6.30 p. m. September 11 (discharge, 34 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 4,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 20, July 26: Gage height, 1.58 feet; discharge, 65.6 second-feet.

Daily Mean Gage Height, in feet, of Loyalhanna Creek at New Alexandria, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.16	2.75	5.40	2.75	2.50	2.76	5.16	2.32	1.87	1.72	1.88	1.48
2	2.02	3.28	4.94	2.42	2.70	3.06	4.55	2.29	1.88	2.12	2.61	1.47
3	2.33	2.71	4.60	2.39	2.69	3.13	3.90	2.23	2.37	2.19	3.04	1.52
4	2.85	2.52	4.20	3.10	2.46	3.66	3.58	2.64	2.02	1.97	2.12	1.52
5	2.68	2.34	3.90	3.68	2.40	4.26	3.26	2.81	1.95	1.77	1.64	1.52
6	2.54	2.26	3.55	3.26	2.34	4.74	3.04	2.48	2.16	1.70	1.72	1.50
7	2.37	2.18	3.42	2.76	2.28	5.43	2.90	2.40	2.05	1.61	1.66	1.48
8	2.31	2.07	3.28	2.68	2.20	5.26	2.90	2.29	1.92	1.60	1.96	1.47
9	2.30	2.19	3.19	2.74	2.22	4.68	2.86	2.23	2.01	1.54	1.90	1.46
10	2.16	2.21	3.08	2.62	2.34	4.05	2.72	2.24	3.75	1.52	1.66	1.42
11	2.05	2.28	2.92	2.60	2.48	3.80	2.61	2.27	3.05	1.52	1.62	1.40
12	2.00	2.58	3.48	2.47	3.87	3.59	2.61	2.24	2.60	1.48	1.58	1.70
13	1.98	2.67	3.44	2.58	4.17	3.36	2.61	2.22	2.28	1.47	1.56	1.67
14	1.91	2.66	3.32	2.50	3.06	3.42	3.77	2.18	2.10	1.47	1.54	1.64
15	1.90	3.35	3.12	2.56	2.91	5.33	8.37	2.15	2.05	1.47	1.54	1.58
16	1.86	3.35	3.10	2.42	2.74	4.57	5.26	2.12	2.00	1.47	1.54	1.54
17	1.85	4.61	3.35	2.16	2.68	3.86	4.15	2.12	2.00	1.47	1.52	1.46
18	1.85	4.76	4.12	2.49	2.72	3.42	3.96	2.32	1.98	1.51	1.50	1.44
19	1.88	3.86	3.65	4.05	3.68	3.26	3.52	2.53	1.91	1.50	1.82	1.53
20	2.32	3.72	3.38	4.92	4.36	3.18	3.36	2.44	1.90	1.57	1.62	1.50
21	2.26	3.27	3.16	4.32	3.78	2.96	3.22	2.36	1.88	1.54	1.55	1.48
22	2.14	3.05	2.81	4.09	3.46	2.85	3.20	2.28	1.90	1.47	1.52	1.48
23	2.04	2.88	3.37	3.38	3.29	2.53	2.99	2.20	1.90	1.60	1.50	1.48
24	1.99	3.29	6.99	2.78	3.20	2.75	2.81	2.14	1.90	1.89	1.53	1.46
25	1.94	4.08	5.75	2.58	3.02	2.94	2.74	2.14	1.90	1.67	1.54	1.46
26	1.90	4.69	4.30	2.60	2.86	2.82	2.66	2.14	1.90	1.54	1.52	1.46
27	1.89	7.11	3.82	2.58	2.85	3.14	2.62	2.10	1.90	1.50	1.54	1.46
28	1.86	9.16	3.34	2.50	2.94	4.05	2.50	2.04	1.88	1.50	1.53	1.46
29	1.82	9.22	3.10	2.48	-------	3.82	2.42	2.00	2.76	1.50	1.50	1.46
30	1.80	6.38	2.85	2.30	-------	3.78	2.37	1.95	1.90	1.50	1.50	1.46
31	2.15	-------	2.85	2.23	-------	4.27	-------	1.90	-------	1.60	1.49	-------

Note.—Stage-discharge relation Dec. 31 to Jan. 3, Jan. 8-17, 24-31 and Feb. 15-19 affected by ice.

Daily discharge, in second-feet, of Loyalhanna Creek at New Alexandria, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	211	452	2,180	300	340	452	2,020	268	122	87	125	45
2	166	740	1,780	260	430	630	1,570	257	125	197	385	44
3	272	430	1,570	280	430	630	1,090	235	288	222	575	51
4	500	340	1,290	630	324	970	910	408	166	151	197	51
5	430	276	1,090	970	300	1,360	740	475	145	98	72	51
6	362	246	910	685	276	1,640	575	332	211	83	87	48
7	288	218	795	452	253	2,180	525	300	175	67	76	45
8	264	181	740	360	225	2,100	525	257	136	65	148	44
9	200	222	685	320	232	1,640	500	235	163	55	130	42
10	211	229	630	280	276	1,150	430	239	1,030	51	76	37
11	175	253	525	240	332	1,030	385	249	575	51	69	34
12	160	385	850	220	1,090	910	385	239	385	45	62	83
13	154	408	795	220	1,290	795	385	232	253	44	58	78
14	133	408	740	200	630	795	452	218	190	44	55	72
15	130	795	630	200	300	2,100	5,180	208	175	44	55	62
16	120	795	630	200	240	1,570	2,100	197	160	44	55	55
17	117	1,570	795	240	260	1,090	1,290	197	160	44	51	42
18	117	1,710	1,220	336	300	795	1,150	268	154	50	48	40
19	125	1,090	910	1,150	550	740	850	362	133	48	110	53
20	268	970	795	1,780	1,430	685	795	316	130	60	60	48
21	246	740	685	1,360	1,030	550	685	284	125	55	56	45
22	204	575	500	1,220	850	500	685	253	130	44	51	45
23	172	525	795	795	740	362	575	225	130	65	48	45
24	157	740	3,650	420	685	452	475	204	130	127	53	42
25	142	1,220	2,520	280	575	550	452	204	130	78	55	42
26	130	1,640	1,360	240	500	475	408	204	130	55	51	42
27	127	3,750	1,030	220	500	630	385	190	130	48	55	42
28	120	6,120	740	200	550	1,150	340	172	125	48	53	42
29	110	6,120	630	200	-------	1,030	308	160	452	48	48	42
30	105	3,060	500	220	-------	1,030	288	145	130	48	48	42
31	208	-------	380	240	-------	1,360	-------	130	-------	65	47	-------

Note.—Discharge Dec. 31 to Jan. 3, Jan. 8-17, 24-31 and Feb. 15-19 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Blacklick Creek at Blacklick, Stony Creek at Johnstown and Chartiers Creek at Carnegie.

Monthly discharge of Loyalhanna Creek at New Alexandria, for the year ending Sept. 30, 1922
(Drainage area 264 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	500	105	199	0.754	0.87
November	6,120	181	1,210	4.58	5.11
December	3,650	380	1,040	3.94	4.54
January	1,780	200	475	1.80	2.08
February	1,480	225	534	2.02	2.10
March	2,180	362	1,010	3.83	4.42
April	5,180	288	882	3.34	3.73
May	475	130	247	.936	1.08
June	1,030	122	216	.818	.91
July	222	44	72.0	.273	.31
August	575	47	99.0	.375	.43
September	83	34	48.5	.184	.21
The Year	6,120	34	502	1.90	25.79

OHIO BASIN—STATION NO. 18

KISKIMINITAS RIVER AT AVONMORE

Location.—At four-span steel highway bridge, Avonmore, Westmoreland County.

Drainage Area.—1,720 square miles.

Records Available.—May 29, 1907, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by J. H. Shupe. Elevation of gage zero 805.64 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left bank is low and overflows at high stages. Bed is composed of gravel. Control is at the first of a series of riffles about 500 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 24.65 feet observed at 8.45 a. m. November 29 (discharge, about 54,200 second-feet); minimum, 2.24 feet at 4.45 p. m. September 26 (discharge, 221 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 30,000 second-feet. Gage read twice daily to half tenths October 1 to July 26; to hundredths since that date; during high stages more frequently. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

The following discharge measurement was made by H. L. Landis: No. 40, July 26: Gage height, 3.22 feet; discharge, 767 second-feet.

Daily Mean Gage Height, in feet, of Kiskiminitas River at Avonmore, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.82	4.92	11.90	5.45	7.30	6.43	10.98	4.05	3.35	3.77	3.46	2.56
2	3.68	7.89	10.55	4.80	8.44	6.23	10.66	3.95	3.30	4.62	3.75	2.65
3	3.71	6.60	10.48	5.42	11.95	6.05	8.97	3.90	3.85	7.12	4.02	2.53
4	4.63	5.35	9.15	5.59	9.40	6.70	8.09	4.13	4.45	5.70	4.00	2.44
5	4.75	4.80	8.32	6.89	8.14	7.68	7.35	4.83	3.75	4.57	3.50	2.31
6	4.42	4.38	7.72	7.10	5.98	8.63	6.38	4.87	3.65	4.00	3.14	2.43
7	4.08	4.05	7.12	5.95	5.23	11.19	6.00	5.20	3.55	3.60	2.95	2.45
8	3.92	3.98	6.72	5.45	4.77	12.46	5.77	4.80	3.37	3.40	3.03	2.40
9	3.92	3.90	6.45	5.58	4.37	9.55	5.67	4.43	3.48	3.25	3.16	2.37
10	3.78	4.02	6.10	5.45	4.57	8.67	5.47	4.23	5.15	3.10	3.02	2.34
11	3.62	4.10	5.90	5.20	4.80	8.50	5.17	4.30	5.09	3.05	2.87	2.33
12	3.45	4.40	6.20	4.55	6.32	8.87	5.05	4.20	7.74	2.95	2.76	2.65
13	3.38	4.88	7.35	4.92	9.08	7.95	4.95	4.05	5.47	2.90	2.68	2.99
14	3.30	4.73	6.88	6.68	6.85	7.50	6.28	3.95	4.47	2.97	2.60	2.71
15	3.25	6.07	6.40	5.74	6.40	9.25	16.41	3.77	4.00	2.87	2.57	2.56
16	3.18	6.67	5.98	5.67	5.85	9.93	13.00	3.75	3.70	2.83	2.63	2.46
17	3.10	8.15	5.95	6.96	5.59	8.29	9.49	3.75	3.65	2.79	2.65	2.41
18	3.10	10.73	7.50	8.62	7.30	7.20	9.00	3.83	3.67	4.36	2.60	2.37
19	3.20	9.15	8.82	9.68	8.02	6.65	7.87	4.73	3.40	4.42	2.93	2.30
20	3.48	7.98	7.52	10.62	10.38	6.30	7.05	5.55	3.35	3.70	3.04	2.32
21	3.80	7.00	6.95	9.10	9.85	6.00	6.47	4.77	3.15	3.20	2.70	2.34
22	3.80	6.30	6.30	8.50	8.07	5.57	6.17	4.53	3.10	3.03	2.57	2.34
23	3.60	5.75	6.17	6.80	8.30	5.13	5.80	4.30	3.05	2.95	2.52	2.36
24	3.40	5.92	10.79	6.78	7.93	5.30	5.50	4.10	3.05	3.73	2.51	2.35
25	3.32	7.92	11.90	9.38	6.87	5.73	5.17	3.93	2.97	3.70	2.58	2.32
26	3.20	8.64	9.40	9.15	6.30	5.65	5.03	3.97	2.85	3.24	2.53	2.26
27	3.20	13.56	8.15	8.75	6.57	5.94	4.85	4.31	2.93	2.99	2.50	2.33
28	3.12	17.90	7.25	8.65	7.30	8.67	4.65	3.97	3.13	2.93	2.51	2.32
29	3.10	21.78	6.65	8.37	-------	8.76	4.35	3.65	4.37	2.81	2.47	2.35
30	3.10	14.96	5.98	8.03	-------	8.81	4.23	3.53	4.35	2.72	2.43	2.37
31	3.64	-------	5.50	7.63	-------	10.11	-------	3.45	-------	2.77	2.52	-------

Note.—Stage-discharge relation Dec. 31 to Jan. 4, Jan. 7-20, Jan. 22 to Feb. 11, Feb. 15-18 and Feb. 25 to Mar. 2 affected by ice.

Daily discharge, in second-feet, of Kiskiminitas River at Avonmore, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,160	2,150	13,100	1,900	1,800	4,000	11,100	1,320	840	1,160	910	352
2	1,090	5,820	10,300	1,600	3,000	3,400	10,500	1,320	805	1,800	1,160	290
3	1,090	4,120	10,100	1,900	3,200	3,380	7,460	1,240	1,160	4,750	1,320	312
4	1,860	2,680	7,780	2,000	2,400	4,240	6,110	1,410	1,680	3,030	1,320	303
5	2,050	2,050	6,410	4,490	1,700	5,540	5,140	2,050	1,160	1,860	945	249
6	1,680	1,680	5,540	4,750	1,500	6,860	3,860	2,150	1,020	1,320	700	298
7	1,410	1,320	4,750	3,200	1,300	11,500	3,380	2,460	1,020	1,020	570	308
8	1,240	1,320	4,240	2,400	1,200	14,500	3,140	2,050	810	875	672	285
9	1,240	1,240	3,860	2,000	1,200	8,460	3,030	1,680	945	770	700	273
10	1,160	1,320	3,500	1,800	1,200	7,010	2,800	1,500	2,460	665	600	291
11	1,020	1,410	3,260	1,600	1,500	6,710	2,460	1,590	2,360	632	510	257
12	910	1,680	3,620	1,400	3,740	7,310	2,250	1,500	5,540	570	452	400
13	855	2,150	5,140	1,300	7,620	5,960	2,250	1,320	2,830	540	425	600
14	805	1,960	4,490	1,200	4,360	5,270	3,740	1,320	1,770	570	375	425
15	770	3,500	3,860	1,200	2,800	7,780	24,800	1,160	1,320	510	352	352
16	735	4,240	3,380	1,200	2,000	8,980	15,700	1,160	1,020	510	400	312
17	665	6,260	3,380	1,200	1,700	6,410	8,290	1,160	1,020	480	400	290
18	665	10,500	5,270	1,500	1,960	4,880	7,460	1,160	1,090	1,680	375	273
19	735	7,780	7,160	2,400	5,960	4,120	5,820	1,960	875	1,680	570	245
20	945	5,960	5,270	8,000	9,930	3,740	4,620	2,920	840	1,090	632	253
21	1,160	4,620	4,020	7,620	8,800	3,380	3,990	2,050	700	735	425	261
22	1,160	3,740	3,740	4,400	6,110	2,920	3,620	1,770	665	632	352	261
23	1,020	3,140	3,620	2,400	6,410	2,360	3,140	1,590	632	570	330	269
24	875	3,260	10,700	1,900	5,820	2,580	2,800	1,410	632	1,090	330	265
25	805	5,820	13,100	1,600	3,600	3,030	2,460	1,240	570	1,090	375	253
26	735	6,860	8,120	1,500	3,200	2,920	2,250	1,320	510	770	352	229
27	735	17,200	6,260	1,400	3,400	3,260	2,050	1,590	570	600	330	277
28	665	29,500	4,880	1,300	4,000	7,010	1,860	1,320	700	570	330	253
29	665	43,200	4,120	1,200	-------	7,160	1,680	1,020	1,680	480	316	265
30	665	20,800	3,380	1,300	-------	7,160	1,500	945	1,680	425	298	273
31	1,020	-------	2,600	1,400	-------	9,360	-------	910	-------	452	330	-------

Note.—Discharge Dec. 31 to Jan. 4, Jan. 7-20, Jan. 22 to Feb. 11, Feb. 15-18 and Feb. 25 to Mar. 2 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Blacklick Creek at Blacklick, Loyalhanna Creek at New Alexandria, Crooked Creek at Hileman's Farm and Stony Creek at Johnstown.

Monthly discharge of Kiskiminitas River at Avonmore, for the year ending Sept. 30, 1922

(Drainage area 1,720 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	2,050	665	1,020	0.593	0.68
November	43,200	1,240	6,910	4.02	4.49
December	13,100	2,600	5,790	3.37	3.89
January	8,000	1,200	2,350	1.37	1.58
February	9,930	1,200	3,620	2.10	2.19
March	14,500	2,360	5,840	3.40	3.92
April	24,800	1,500	5,310	3.09	3.45
May	2,920	910	1,540	.895	1.03
June	5,540	510	1,300	.756	.84
July	4,750	425	1,060	.616	.71
August	1,320	298	552	.321	.37
September	600	229	302	.176	.20
The year	43,200	229	2,960	1.72	23.35

OHIO BASIN—STATION NO. 19

KISKIMINITAS RIVER AT VANDERGRIFT

Location.—At pump house of the American Steel and Tin Plate Company, about 300 feet downstream from the Pennsylvania Railroad Station, Vandergrift, Westmoreland County.

Drainage Area.—1,830 square miles.

Records Available.—November 1, 1915, to September 30, 1922.

Gage.—A float type gage is installed at the pump house sump well, which operates through a 3 inch pipe and indicates the river stage on a vertical staff inside the pumping station; read to feet and inches twice daily by pump house engineer; during high stages more frequently. Elevation of gage zero 767.14 feet, United States Geological Survey datum.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and rock.

Extremes of Stage.—Maximum gage height during the year, 24.5 feet observed at 7 a. m. November 29; minimum, 2.00 feet on September 9 and at 6 a. m. September 11.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Record is furnished by the American Steel and Tin Plate Company, Vandergrift.

Daily Mean Gage Height, in feet, of Kiskiminitas River at Vandergrift, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.21	4.57	11.54	6.08	4.29	6.96	10.54	4.67	4.00	4.54	-------	2.80
2	4.17	7.33	10.08	5.17	5.17	6.38	11.08	4.50	3.79	5.92	-------	2.75
3	3.95	6.90	9.96	4.65	7.21	6.08	9.42	4.46	3.84	8.04	-------	2.83
4	4.55	5.58	9.25	5.26	6.75	6.49	8.85	4.29	4.91	6.75	-------	2.79
5	5.00	4.92	8.08	6.78	6.00	7.79	7.80	5.04	4.51	5.42	-------	2.54
6	4.62	4.83	7.54	7.51	5.29	8.63	7.16	5.29	4.04	4.80	-------	2.46
7	4.58	4.25	7.08	6.56	5.14	10.96	6.58	5.54	3.96	4.33	3.46	2.29
8	4.25	4.00	6.88	6.46	4.48	12.68	6.33	5.34	3.62	4.00	3.08	2.21
9	4.25	3.92	6.46	6.04	4.21	9.83	6.38	5.17	3.62	4.04	3.42	2.00
10	3.62	3.92	6.54	5.92	4.62	8.49	6.12	4.83	4.87	3.58	3.38	2.08
11	3.54	4.00	6.38	5.62	4.75	8.42	5.71	4.66	5.47	3.46	3.29	2.16
12	3.46	4.29	6.21	4.83	5.96	9.17	5.58	4.71	7.94	3.33	3.04	2.17
13	3.33	4.79	7.00	4.42	8.90	8.42	5.54	4.71	6.27	3.17	3.17	2.12
14	3.25	5.04	6.92	4.20	7.46	7.71	5.56	4.67	4.98	3.16	3.00	3.04
15	3.21	6.20	6.67	4.00	6.92	8.97	14.83	4.25	4.66	3.17	2.92	2.71
16	3.12	6.51	6.21	3.92	6.17	10.18	12.74	4.08	4.50	3.38	2.83	2.58
17	3.00	7.63	6.04	3.83	6.00	8.79	9.66	4.04	4.71	3.12	2.75	2.58
18	2.92	10.27	7.11	3.88	6.00	7.75	9.21	4.16	4.65	4.40	2.62	2.50
19	3.21	8.77	8.93	5.48	6.97	7.29	8.42	4.71	4.04	4.92	2.92	2.42
20	3.38	8.10	7.67	9.75	9.83	6.67	7.66	6.04	3.88	4.46	3.67	2.54
21	3.67	6.97	7.08	9.23	10.17	6.46	6.80	5.54	3.92	4.00	3.29	2.50
22	3.88	6.42	6.00	9.02	8.46	6.12	6.46	5.17	3.83	3.46	3.00	2.50
23	3.79	6.08	6.06	6.87	8.25	5.67	6.50	4.96	3.50	3.54	2.88	2.50
24	3.58	5.76	9.34	5.25	7.75	5.58	6.04	4.83	3.38	3.88	2.92	2.50
25	3.33	7.52	12.36	4.75	6.83	6.04	5.71	4.62	3.21	4.50	2.75	2.50
26	3.29	8.21	9.63	4.29	6.92	6.17	5.38	4.54	3.12	4.00	2.62	2.50
27	3.42	12.44	8.12	4.08	6.79	6.17	5.42	4.50	3.08	3.46	2.67	2.25
28	3.33	16.88	7.25	4.04	7.50	8.52	5.25	4.58	3.21	3.08	2.75	2.25
29	3.12	22.15	6.58	4.08	-------	9.00	5.08	4.25	4.39	3.00	2.71	2.25
30	3.08	14.97	6.12	4.08	-------	8.87	5.00	4.17	5.23	3.00	2.75	2.25
31	3.46	-------	5.58	4.21	-------	10.21	-------	4.00	-------	2.92	2.75	-------

Note.—Stage-discharge relation Jan. 1-3, 22 and 23, Feb. 7-10 and Feb. 26 affected by ice. Gage height Aug. 1-6 unsatisfactory.

OHIO BASIN—STATION NO. 20

ALLEGHENY RIVER AT FREEPORT

Location.—At three-span steel highway bridge, Freeport, Armstrong County, about 500 feet above mouth of Buffalo Creek.

Drainage Area.—11,400 square miles, including Buffalo Creek.

Records Available.— April 16, 1873, to September 30, 1922.

Gage.—Painted staff on first pier from right bank; read to tenths twice daily by Mrs. Anna R. Burtner; during high stages more frequently. Elevation of gage zero 734.98 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of sand and gravel. Control is at a riffle about two miles below the station.

Extremes of Stage.—Maximum gage height during the year, estimated from hydrograph, 19.8 feet at 10 a. m. November 29; minimum, 0.7 foot on September 30.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

The following discharge measurement was made by C. B. McElrath: No. 21, July 25: Gage height, 2.30 feet; discharge, 3,800 second-feet.

Daily Mean Gage Height, in feet, of Allegheny River at Freeport, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.25	4.65	12.7	4.9	-------	7.1	16.25	4.55	2.7	4.65	1.8	2.9
2	4.1	11.0	11.05	-------	-------	6.25	16.3	4.2	2.6	4.8	2.0	1.8
3	4.1	14.25	10.55	-------	-------	5.7	14.2	4.0	2.8	6.0	2.4	1.5
4	4.05	12.65	9.35	-------	-------	5.7	12.2	3.95	3.5	5.35	2.85	1.5
5	4.2	11.1	8.8	6.05	9.0	-------	11.0	4.5	3.8	4.45	2.4	1.5
6	4.0	9.4	8.05	10.55	8.3	-------	9.8	4.95	3.2	4.0	2.1	1.5
7	4.0	8.6	7.3	11.35	7.2	9.7	8.85	5.2	3.0	3.7	2.3	1.5
8	4.2	7.8	6.8	10.0	6.8	14.65	8.25	4.9	3.0	3.4	2.3	1.5
9	4.0	7.05	6.65	7.95	-------	13.9	7.9	4.8	2.8	2.9	2.45	1.5
10	4.2	6.65	6.05	7.25	5.9	11.9	6.95	4.5	3.0	2.4	2.6	1.5
11	5.2	7.35	5.9	6.35	-------	11.7	6.7	4.2	4.75	2.0	3.65	1.5
12	5.05	8.45	5.7	6.2	-------	13.85	8.25	4.0	6.45	2.0	3.3	2.0
13	4.95	8.45	6.45	5.9	8.1	13.5	9.7	4.0	9.15	2.0	2.6	2.0
14	6.6	7.9	6.35	5.4	7.0	11.8	9.6	3.9	8.3	2.0	2.1	2.0
15	6.65	8.0	6.1	4.45	6.95	12.05	14.3	3.6	6.6	1.8	2.1	1.8
16	5.75	8.55	5.65	5.3	6.4	12.05	14.75	3.3	5.25	1.8	1.9	1.7
17	4.9	9.4	5.15	5.6	-------	10.45	12.45	3.1	4.6	1.8	1.9	1.7
18	4.4	11.9	6.65	5.85	7.7	9.3	11.3	2.9	4.0	2.5	1.9	1.7
19	4.1	13.55	10.05	5.75	7.85	8.8	12.0	3.75	3.8	3.3	2.7	1.7
20	4.0	14.4	10.95	7.15	7.55	7.5	10.7	4.6	3.8	3.15	2.55	1.7
21	4.3	13.9	9.15	7.45	8.2	7.2	9.55	5.5	3.5	2.9	2.0	1.5
22	4.4	12.1	7.8	7.2	8.1	6.95	8.75	5.3	3.0	2.5	2.0	1.4
23	4.5	10.55	6.65	5.9	10.5	6.4	8.0	5.1	2.7	2.5	1.7	1.4
24	4.5	9.45	8.45	4.8	11.6	6.0	7.3	4.9	2.7	2.5	1.7	1.4
25	4.3	10.25	10.5	5.2	11.35	6.3	6.1	4.5	2.7	2.8	1.7	1.4
26	4.0	11.05	9.15	-------	9.85	6.9	6.0	4.3	2.7	2.3	1.85	1.4
27	3.9	13.3	7.95	-------	8.5	7.45	5.5	5.15	2.5	2.3	3.15	1.4
28	3.75	15.7	6.95	-------	8.0	10.85	5.3	4.9	2.8	2.0	3.0	1.1
29	3.4	18.75	6.8	7.0	-------	13.85	5.0	3.8	2.8	2.0	2.8	.9
30	3.5	15.25	6.7	-------	-------	13.7	5.0	2.9	3.0	2.0	2.4	.7
31	3.55	-------	5.05	-------	-------	14.05	-------	2.7	-------	1.8	2.4	-------

Note.—Gage height not observed on days of no record. Stage-discharge relation Jan. 12 to Feb. 22 affected by ice.

OHIO BASIN—STATION NO. 21

SOUTH FORK TEN MILE CREEK AT POLLOCK'S MILL

Location.—At single-span steel highway bridge, about two miles below Jefferson, at Pollock's Mill, Greene County.

Drainage Area.—190 square miles.

Records Available.—June 22, 1915, to September 30, 1922.

Gage.—Staff attached to downstream corner of right abutment; read to tenths twice daily by James M. Pollock.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left begins to overflow at a stage of about 7 feet. Bed is a formation of rock shingle and gravel. Control is at a riffle about 200 feet below gage; may shift occasionally.

Extremes of Stage.—Maximum gage height during the year, 8.6 feet observed at 7. a. m. December 24; minimum, 1.0 foot several days in August and September.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

The following discharge measurement was made by C. B. McElrath: No. 14, July 31: Gage height, 1.23 feet; discharge, 8.63 second-feet.

Daily Mean Gage Height, in feet, of South Fork Ten Mile Creek at Pollock's Mill, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	3.95	3.4	1.9	1.7	2.7	3.8	1.5	1.3	1.6	1.8	1.1
2	1.6	3.0	3.05	1.9	2.45	3.0	2.95	1.5	1.45	1.85	1.8	2.25
3	2.05	2.6	2.85	1.8	2.85	2.7	2.65	1.6	2.25	2.95	1.7	2.1
4	2.4	2.25	2.75	2.4	2.0	2.7	2.45	1.85	2.15	1.85	1.6	1.85
5	2.15	2.0	2.6	3.65	1.9	3.2	2.15	2.1	1.85	1.7	1.5	1.55
6	2.0	1.8	2.6	2.6	1.75	4.1	2.05	2.2	1.7	1.6	1.3	1.5
7	1.8	1.7	2.6	2.3	1.6	5.1	2.0	1.95	1.6	1.6	1.3	1.45
8	1.8	1.7	2.5	2.1	1.6	4.25	2.3	1.85	1.6	1.5	1.3	1.4
9	1.7	1.7	2.5	2.05	1.5	3.1	2.15	1.8	1.5	1.5	1.2	1.3
10	1.8	1.7	2.3	1.9	1.6	2.45	2.05	1.7	1.5	1.4	1.2	1.3
11	1.6	2.3	2.3	2.1	1.85	2.5	3.0	1.7	1.35	1.35	1.15	1.3
12	1.5	2.8	2.8	2.1	2.1	2.6	2.9	1.7	2.15	1.25	1.1	1.4
13	1.5	2.8	2.8	2.1	2.85	2.35	2.8	1.7	1.65	4.2	1.1	1.7
14	1.4	3.05	2.65	2.1	2.25	2.4	3.85	1.6	1.6	5.95	1.1	1.6
15	1.4	3.1	2.3	2.0	1.9	5.5	7.1	1.6	1.6	3.65	1.1	1.5
16	1.4	3.1	2.3	1.9	1.75	3.85	4.85	1.55	1.6	2.0	1.1	1.4
17	1.4	4.8	2.3	1.9	1.7	2.8	3.9	1.9	1.75	1.8	1.1	1.3
18	1.4	3.65	3.45	2.0	1.65	2.3	3.3	2.75	1.75	1.7	1.1	1.2
19	1.4	3.0	3.85	3.35	2.05	2.3	2.5	2.6	1.55	1.6	1.0	1.1
20	1.5	3.2	2.5	3.2	3.3	2.3	2.45	2.0	1.45	1.5	1.0	1.1
21	1.7	3.25	2.4	3.55	2.85	2.1	2.0	1.9	1.85	1.5	1.0	1.1
22	1.6	3.25	2.95	2.95	2.25	2.0	1.9	1.7	1.65	1.4	1.0	1.1
23	1.5	3.0	4.25	2.35	2.15	1.85	1.8	1.6	1.45	1.4	1.0	1.1
24	1.5	3.25	6.95	2.1	1.95	1.75	1.7	1.6	1.4	1.4	1.05	1.1
25	1.4	3.8	4.1	1.9	1.75	1.9	1.7	1.5	1.4	1.4	1.35	1.1
26	1.4	4.6	3.0	2.2	1.6	1.8	1.7	1.5	1.3	1.3	1.45	1.1
27	1.4	7.35	2.65	1.9	2.15	2.1	1.7	1.5	1.3	1.3	1.3	1.1
28	1.4	6.0	2.35	1.9	2.1	3.5	1.7	1.5	2.8	1.2	1.2	1.1
29	1.4	4.95	2.2	1.8	-------	3.15	1.6	1.5	2.5	1.2	1.2	1.0
30	1.4	3.95	2.1	1.7	-------	3.3	1.6	1.45	1.9	1.2	1.2	1.0
31	2.2	-------	2.0	1.7	-------	3.85	-------	1.3	-------	1.2	1.1	-------

Note.—Stage-discharge relation probably affected by ice Jan. 11-14 and 26.

OHIO BASIN—STATION NO. 22

MONONGAHELA RIVER AT SOUTH BROWNSVILLE

Location.—At four-span steel highway bridge, known as Brownsville Bridge, South Brownsville, Fayette County, about one quarter of a mile downstream from Lock No. 5.

Drainage Area.—5,130 square miles.

Records Available.—February 18, 1915, to September 30, 1922.

Gage.—Staff in two sections. Lower section is at Lock No. 5, attached to downstream side of middle wall, graduated from zero to 32.4 feet. Upper section is about 200 feet below the lower lock gate, on railroad embankment, graduated from 31.0 feet to 45.5 feet. Gage read to tenths twice daily by Charles W. Keibler; during high stages more frequently. Elevation of gage zero 726.23 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge.

Channel and Control.—Right bank is high and not subject to overflow; left is overflowed during extremely high stages. Control is lock and dam No. 4. Flashboards are used on the dam during low water which affect the stage-discharge relation.

Extremes of Stage.—Maximum gage height during the year, 39.3 feet observed at 10 p. m. December 24; minimum 10.2 feet from 8 p. m. August 17 to 8 p. m. August 18 and from 8 p. m. August 20 to 8 p. m. August 21.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Daily Mean Gage Height, in feet, of Monongahela River at South Brownsville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12.55	14.2	20.1	12.55	11.6	13.35	15.85	11.45	10.75	11.8	10.75	12.0
2	12.4	19.65	17.0	12.2	11.55	16.0	17.95	11.3	10.65	11.4	10.55	13.9
3	12.4	18.0	16.45	11.7	12.0	22.05	16.4	11.15	10.75	11.85	10.65	15.3
4	13.8	15.2	16.4	11.55	12.6	19.6	14.65	11.15	11.35	12.0	10.85	12.9
5	15.8	13.95	15.4	12.7	11.95	18.15	13.65	11.9	11.4	13.2	11.1	11.9
6	14.85	13.1	14.9	13.7	11.65	18.55	13.05	15.05	11.7	13.55	10.9	11.25
7	13.95	12.65	14.55	13.8	11.6	18.15	12.6	16.25	12.0	12.65	10.65	10.95
8	13.3	12.3	14.65	13.4	11.6	18.5	12.45	14.55	11.8	11.75	10.5	10.85
9	12.8	12.05	14.8	12.95	11.35	17.5	12.25	13.15	11.4	11.35	10.45	11.95
10	12.7	11.85	14.5	13.15	11.15	16.1	11.95	12.40	11.9	11.05	10.65	11.75
11	12.5	12.25	14.05	13.2	11.3	15.45	12.0	12.10	11.3	10.75	11.2	11.75
12	12.35	12.5	13.95	14.95	17.2	16.05	11.65	11.85	11.95	10.6	10.95	11.6
13	12.15	12.5	14.95	15.35	20.35	15.5	11.5	11.75	14.0	11.4	10.7	11.9
14	12.05	12.6	15.2	13.85	18.7	14.75	12.55	11.8	13.45	12.25	10.55	12.25
15	11.9	12.7	15.25	13.15	16.05	22.55	24.0	11.65	12.2	11.7	10.5	12.1
16	11.8	13.6	14.65	13.25	14.8	28.6	24.45	11.5	11.5	11.4	10.4	11.95
17	11.8	15.95	14.35	13.6	14.25	21.15	18.85	11.4	11.0	11.1	10.35	11.85
18	11.6	21.0	16.9	13.2	13.3	16.4	15.65	11.25	13.05	10.9	10.2	11.7
19	11.6	18.5	20.75	15.65	13.15	14.7	14.3	11.6	16.95	10.8	10.3	11.65
20	11.65	15.75	17.6	23.65	15.05	13.8	13.8	13.15	14.15	11.25	10.25	11.55
21	11.8	15.5	15.35	23.35	20.2	13.45	13.25	13.2	12.7	11.3	10.2	11.4
22	11.8	15.15	14.15	22.3	19.55	13.0	12.85	12.4	12.25	10.9	10.75	11.25
23	11.7	14.05	14.6	19.0	16.65	12.55	12.8	11.9	11.8	10.65	11.0	11.2
24	11.8	14.35	30.7	15.95	15.0	12.35	12.65	11.55	11.25	10.6	11.4	11.1
25	11.8	21.9	34.7	14.25	13.85	12.6	12.5	11.25	11.0	10.7	11.8	11.15
26	11.65	21.75	24.7	13.65	13.1	12.85	12.1	11.2	10.8	10.95	12.8	11.2
27	11.5	21.25	18.3	12.45	12.8	12.9	11.95	11.3	10.65	11.3	12.7	11.2
28	11.6	25.55	15.65	12.3	13.2	13.45	11.9	11.2	10.6	11.05	12.35	11.1
29	11.5	33.20	14.35	12.2	-------	14.35	11.85	11.45	10.95	10.8	12.2	11.0
30	11.5	26.35	13.6	11.8	-------	14.45	11.65	11.2	11.05	11.4	12.1	10.9
31	11.65	-------	12.9	11.75	-------	14.35	-------	10.9	-------	11.0	12.1	-------

OHIO BASIN—STATION NO. 23

YOUGHIOGHENY RIVER AT FRIENDSVILLE, MD.

Location.—At two-span steel highway bridge, Friendsville, Garrett County, about 6,000 feet upstream from the mouth of Bear Creek.

Drainage Area.—295 square miles.

Records Available.—August 17, 1898, to December 31, 1904, and September 1 to 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read to hundredths twice daily by J. W. Holman. Elevation of gage zero 1,467.82 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Low-water control is at a riffle, about 700 feet downstream from the gage, extending from the head of an island to the right and left banks, where the bed is composed of gravel and rock; probably permanent.

Extremes of Stage.—Maximum gage height during the month of September 4.60 feet at 6 p. m. on the 3rd; minimum, 3.82 feet at 7.45 a. m. on the 27th.

Ice.—Stage-discharge relation usually affected by ice.

The following discharge measurement was made by H. L. Landis: No. 15, July 29: Gage height, 4.06 feet; discharge, 64.9 second-feet.

Daily Mean Gage Height, in feet, of Youghiogheny River at Friendsville, Md., for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1												3.98
2												4.09
3												4.52
4												4.38
5												4.24
6												4.14
7												4.08
8												4.03
9												3.99
10												3.97
11												3.90
12												4.10
13												4.08
14												4.03
15												3.97
16												3.94
17												3.90
18												3.88
19												3.88
20												3.88
21												3.86
22												3.86
23												3.84
24												3.86
25												3.84
26												3.84
27												3.83
28												4.02
29												3.88
30												3.86
31												

Note.—Station reestablished Sept. 1, 1922.

OHIO BASIN—STATION NO. 24

YOUGHIOGHENY RIVER NEAR CONFLUENCE

Location.—At two-span steel highway bridge, about one half mile upstream from the mouth of the Casselman River, and about one half mile southwest of Confluence, Somerset County.

Drainage Area.—435 square miles.

Records Available.—September 15, 1904, to September 30, 1922, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read to hundredths twice daily by Walter Shipley. Elevation of gage zero 1,309.79 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left is low and is overflowed during high stages. Bed is rocky and not subject to change. Control for low stages is at the railroad bridge about 200 feet below the gage; for medium and high stages at the railroad bridge about 3,500 feet below gage. Stage-discharge relation is subject to backwater effects from the Casselman River.

Extremes of Stage.—Maximum gage height during the year, 10.93 feet observed at 6.30 a. m. December 24; minimum, 1.14 feet at 6 p. m. September 27.

Ice.—Stage-discharge relation usually affected by ice.

The following discharge measurement was made by C. B. McElrath: No. 42, July 29: Gage height, 1.84 feet; discharge, 137 second-feet.

Daily Mean Gage Height, in feet, of Youghiogheny River near Confluence, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.49	2.01	5.21	2.93	2.53	3.25	5.55	2.39	2.11	2.51	1.76	1.58
2	2.37	2.51	4.48	2.70	3.03	3.47	5.13	2.37	2.09	2.51	1.84	1.59
3	2.54	2.43	4.63	2.73	3.51	4.42	4.30	2.35	2.09	2.93	1.91	2.14
4	3.33	2.28	4.20	2.95	3.19	4.37	3.94	2.53	2.13	2.85	1.90	2.15
5	3.72	2.17	3.88	3.45	2.93	4.03	3.57	3.06	2.65	2.93	1.84	1.92
6	3.55	2.11	3.61	3.34	2.85	4.36	3.31	2.99	2.47	2.71	1.72	1.77
7	3.07	2.07	3.47	3.08	2.82	5.89	3.18	2.98	2.23	2.49	1.68	1.70
8	2.86	2.05	3.37	2.81	2.75	5.88	3.00	2.81	2.11	2.31	1.68	1.62
9	2.77	2.05	3.28	2.93	2.65	4.87	2.89	2.74	2.62	2.31	1.69	1.56
10	2.63	2.07	3.17	2.85	2.66	4.63	2.77	2.63	3.05	2.17	1.62	1.50
11	2.45	2.18	3.12	2.63	3.13	5.19	2.76	2.63	2.69	2.09	1.60	1.50
12	2.33	2.21	3.39	2.55	4.12	5.13	2.81	2.59	3.27	1.97	1.54	1.52
13	2.26	2.19	3.82	2.66	5.09	4.64	2.65	2.51	2.93	2.06	1.52	1.52
14	2.18	2.23	3.63	2.79	4.57	4.25	3.76	2.42	2.65	3.05	1.48	1.60
15	2.14	2.71	3.34	2.79	3.97	7.05	7.65	2.37	2.45	2.67	1.46	1.50
16	2.11	3.09	3.18	2.77	3.52	7.83	6.70	2.31	2.31	2.38	1.46	1.42
17	2.04	3.86	3.33	2.63	3.09	5.59	4.80	2.29	2.27	2.15	1.48	1.37
18	2.01	4.47	6.22	2.87	3.11	4.61	4.25	2.53	2.31	2.10	1.42	1.30
19	2.07	3.71	5.53	4.00	3.32	4.07	3.88	3.53	2.32	2.21	1.47	1.35
20	2.17	3.47	4.43	6.82	5.39	3.79	3.53	3.51	2.19	2.08	1.56	1.30
21	2.28	3.31	3.97	6.36	5.19	3.54	3.20	3.09	2.06	1.99	1.58	1.24
22	2.35	3.01	3.58	5.87	4.49	3.27	3.21	2.83	2.01	1.89	1.52	1.23
23	2.23	2.81	4.33	4.64	4.11	3.10	3.11	2.61	1.97	1.85	1.49	1.24
24	2.21	3.42	9.92	3.99	3.79	3.56	2.95	2.55	1.92	1.99	1.52	1.24
25	2.03	5.44	8.32	3.41	3.49	3.40	2.81	2.53	1.85	2.19	2.32	1.20
26	1.98	4.74	5.90	3.17	3.25	3.19	2.77	2.55	1.79	2.07	2.30	1.20
27	2.07	5.31	4.61	3.05	3.59	3.15	2.73	2.49	1.79	1.93	1.90	1.14
28	2.01	8.93	3.99	2.97	3.89	3.57	2.63	2.39	2.15	1.89	1.72	1.16
29	1.90	9.11	3.59	2.87	-------	3.63	2.55	2.29	3.85	1.82	1.62	1.48
30	1.85	6.31	3.27	2.71	-------	3.49	2.47	2.23	2.97	1.76	1.60	1.34
31	1.83	-------	3.06	2.59	-------	3.65	-------	2.15	-------	1.71	1.55	-------

Note.—Stage-discharge relation Jan. 13-16, 26-31 and Feb. 18 and 19 affected by ice. Station was discontinued Sept. 30, 1922.

OHIO BASIN—STATION NO. 25

CASSELMAN RIVER AT MARKLETON

Location.—At two-span steel highway bridge, Markleton, Somerset County.

Drainage Area.—365 square miles.

Records Available.—August 13, 1913, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by N. B. Sanner.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Control is a 6 inch water main, backed with gravel and boulders, about 250 feet below gage, at the head of a series of riffles; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 7.55 feet observed at 5 p. m. November 28 (discharge, about 9,110 second-feet); minimum, 1.52 feet at 5 p. m. September 28 (discharge, 14 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 2,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 16, July 28: Gage height, 2.14 feet; discharge, 66.5 second-feet.

Daily Mean Gage Height, in feet, of Casselman River at Markleton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.13	2.85	4.78	3.28	3.00	3.72	5.05	2.75	2.59	2.58	2.78	1.94
2	2.92	3.54	4.46	2.80	3.94	3.69	4.59	2.74	2.56	3.19	2.51	1.96
3	3.41	3.08	4.75	3.12	4.02	3.62	4.18	2.72	2.56	3.08	2.31	2.04
4	3.72	2.88	4.28	3.56	3.41	3.72	4.04	2.97	2.56	2.95	2.17	2.08
5	3.85	2.78	4.10	4.10	3.30	3.54	3.80	3.67	2.73	2.78	2.16	2.01
6	3.55	2.71	3.95	3.62	3.28	3.88	3.63	3.88	2.68	2.63	2.11	1.90
7	3.28	2.68	3.84	3.21	3.18	5.36	3.49	3.46	2.52	2.48	2.03	1.85
8	3.18	2.63	3.72	3.02	2.88	5.15	3.48	3.22	2.42	2.40	2.04	1.81
9	3.10	2.60	3.61	3.28	2.98	4.42	3.40	3.09	3.14	2.40	2.06	1.78
10	2.99	2.74	3.51	3.14	3.08	4.51	3.32	3.04	3.03	2.34	2.02	1.76
11	2.86	2.74	3.48	3.06	3.62	4.95	3.24	3.06	2.70	2.28	2.00	1.76
12	2.80	2.77	3.92	2.62	4.18	4.66	3.19	3.00	3.16	2.25	1.94	1.90
13	2.72	2.74	3.90	3.22	4.56	4.40	3.15	2.98	2.88	2.48	1.89	1.86
14	2.64	2.73	3.68	3.34	3.60	4.33	4.64	2.87	2.61	3.09	1.91	1.90
15	2.60	3.32	3.56	3.27	3.65	5.75	6.16	2.81	2.51	2.70	2.08	1.84
16	2.56	3.18	3.44	3.20	3.40	5.50	5.02	2.76	2.44	2.46	1.98	1.79
17	2.56	4.13	3.72	2.98	3.21	4.70	4.44	2.79	2.48	2.86	1.96	1.74
18	2.52	4.41	5.57	3.18	3.28	4.28	4.14	3.50	2.47	2.38	1.94	1.68
19	2.59	3.85	4.66	3.93	4.05	4.06	3.85	4.43	2.50	2.43	1.94	1.68
20	2.71	3.62	4.18	5.28	5.64	3.92	3.70	3.95	2.38	2.40	1.86	1.66
21	2.96	3.45	4.01	4.81	4.60	3.71	3.50	3.56	2.32	2.28	1.82	1.66
22	2.80	3.29	3.61	4.45	4.28	3.54	3.43	3.34	2.28	2.20	1.83	1.67
23	2.68	3.18	4.17	3.85	4.32	3.37	3.32	3.19	2.24	2.15	1.79	1.64
24	2.62	3.49	6.59	3.48	4.08	3.78	3.20	3.06	2.21	2.48	1.84	1.64
25	2.51	4.36	5.34	3.25	3.70	3.65	3.11	2.96	2.15	2.30	1.96	1.62
26	2.48	4.06	4.59	3.24	3.52	3.48	3.08	3.14	2.10	2.22	2.00	1.63
27	2.46	4.90	4.20	3.18	4.22	3.53	3.03	3.04	2.12	2.15	1.95	1.64
28	2.42	6.95	3.92	3.15	4.22	3.98	2.94	2.85	2.38	2.12	1.90	1.56
29	2.40	6.65	3.75	3.14	-------	3.85	2.86	2.76	3.69	2.12	1.94	1.63
30	2.41	5.42	3.40	2.99	-------	3.84	2.80	2.69	2.85	2.08	1.92	1.60
31	2.44	-------	3.40	2.98	-------	3.99	-------	2.62	-------	2.09	1.96	-------

Note.—Stage-discharge relation Dec. 21, Dec. 31 to Jan. 3, Jan. 11, 13-16, 26-31, Feb. 15-17 and Mar. 2-4 affected by ice.

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Daily discharge, in second-feet, of Casselman River at Markleton, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	453	293	2,130	320	366	886	2,430	251	193	190	263	45
2	326	753	1,720	260	1,120	750	1,850	247	184	486	169	47
3	631	421	2,130	280	1,170	700	1,370	239	184	421	115	58
4	886	307	1,480	753	631	700	1,170	351	184	341	82	65
5	1,020	263	1,270	1,270	556	753	978	841	243	263	80	54
6	753	235	1,170	796	556	1,070	841	1,070	224	206	70	40
7	556	224	1,020	486	486	3,130	711	671	172	160	57	35
8	486	206	886	366	307	2,770	711	486	144	138	58	31
9	421	196	796	556	356	1,600	631	421	453	138	62	29
10	361	247	711	453	421	1,720	556	394	394	122	55	28
11	298	247	711	300	796	2,430	521	394	231	107	52	28
12	271	259	1,070	203	1,370	1,990	486	366	453	100	45	40
13	239	247	1,070	220	1,850	1,600	453	356	307	160	39	36
14	210	243	886	240	796	1,480	1,850	303	200	421	41	40
15	196	556	753	260	500	3,950	4,930	275	169	231	65	34
16	184	486	671	300	460	3,320	2,430	256	149	155	50	29
17	184	1,270	886	356	460	1,990	1,600	267	160	128	47	26
18	172	1,600	3,520	486	556	1,480	1,270	711	158	133	45	23
19	193	1,020	1,990	1,120	1,170	1,270	1,020	1,600	166	146	45	23
20	235	796	1,370	2,950	3,520	1,070	886	1,120	133	138	36	22
21	346	671	1,000	2,130	1,850	886	711	753	117	107	32	22
22	271	556	796	1,600	1,480	753	671	594	107	88	33	22
23	224	486	1,370	1,020	1,480	594	556	486	98	78	29	20
24	203	711	6,010	711	1,270	978	486	394	90	160	34	20
25	169	1,600	2,950	521	886	841	421	346	78	112	47	19
26	160	1,270	1,850	400	711	711	421	453	68	93	52	20
27	155	2,270	1,370	340	1,370	753	394	394	72	78	46	20
28	144	7,160	1,070	320	1,370	1,170	336	293	133	72	40	16
29	138	6,010	932	300	-------	1,020	298	255	886	72	45	20
30	141	3,130	631	280	-------	1,020	271	228	293	65	42	18
31	149	-------	460	300	-------	1,170	-------	203	-------	66	47	-------

Note.—Discharge Dec. 21, Dec. 31 to Jan. 3, Jan. 11, 13-16, 26-31, Feb. 15-17 and Mar. 2-4 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Stony Creek at Johnstown, Laurel Hill Creek at Ursina and Youghiogheny River at Connellsville.

Monthly discharge of Casselman River at Markleton, for the year ending Sept. 30, 1922

(Drainage area 365 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	1,020	138	328	0.899	1.04
November	7,160	196	1,120	3.07	3.43
December	6,010	460	1,440	3.95	4.55
January	2,950	203	642	1.76	2.03
February	3,520	307	995	2.73	2.84
March	3,960	594	1,440	3.95	4.55
April	4,930	271	1,040	2.85	3.18
May	1,600	203	484	1.33	1.53
June	886	68	215	.589	.66
July	486	65	167	.458	.53
August	263	29	62.0	.170	.20
September	65	16	31.0	.085	.09
The Year	7,160	16	662	1.81	24.63

OHIO BASIN—STATION NO. 26

LAUREL HILL CREEK AT URSINA

Location.—At two-span steel highway bridge, Ursina, Somerset County.

Drainage Area.—122 square miles.

Records Available.—August 12, 1913, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Lizzie R. Case.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a riffle, where the bed is composed of gravel and boulders, a short distance below the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 6.31 feet observed at 8 a. m. December 24 (discharge, about 4,340 second-feet); minimum, 1.56 feet at 5 p. m. September 17 (discharge, 4.2 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 2,400 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

The following discharge measurement was made by H. L. Landis: No. 17, July 29: Gage height, 1.84 feet; discharge, 31.1 second-feet.

Daily Mean Gage Height, in feet, of Laurel Hill Creek at Ursina, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.28	2.00	3.60	2.36	2.30	2.70	4.01	2.08	2.05	1.99	1.95	1.70
2	2.20	2.15	3.40	2.46	2.48	2.65	4.10	2.04	1.92	2.26	2.15	1.79
3	2.35	2.30	3.41	2.36	2.84	2.75	3.35	2.06	1.96	2.70	2.14	1.82
4	2.57	2.10	3.26	2.22	2.57	2.79	3.04	2.10	2.05	2.30	2.26	1.77
5	3.00	2.04	3.00	2.58	2.44	2.69	2.86	2.17	2.13	2.10	1.95	1.77
6	2.62	2.07	2.77	2.55	2.40	2.75	2.74	2.29	2.22	2.02	1.86	1.72
7	2.48	2.10	2.66	2.49	2.56	3.70	2.60	2.20	2.06	1.92	1.81	1.71
8	2.47	2.11	2.60	2.35	2.36	3.86	2.49	2.22	2.00	1.90	1.86	1.66
9	2.32	2.11	2.58	2.49	2.20	3.18	2.52	2.20	3.10	1.90	1.83	1.78
10	2.25	2.11	2.48	2.38	2.45	3.59	2.53	2.26	2.88	-------	1.78	1.83
11	2.23	2.22	2.41	2.30	2.24	3.60	2.44	2.20	2.65	-------	1.78	1.76
12	2.20	2.30	2.45	2.38	3.04	3.31	2.30	2.14	2.57	-------	1.77	1.70
13	2.20	2.36	2.80	2.56	3.26	3.19	2.49	2.18	2.46	-------	1.77	1.76
14	2.10	2.30	2.61	2.39	2.75	4.15	3.43	2.11	2.30	2.56	1.94	1.71
15	2.09	2.88	2.60	2.34	2.65	3.86	5.05	2.20	2.16	2.05	1.94	1.82
16	2.13	3.12	2.52	2.41	2.59	3.30	3.41	2.08	2.12	-------	1.81	1.86
17	2.04	4.09	2.64	2.50	2.59	3.20	3.18	2.12	2.30	-------	1.79	1.57
18	2.02	3.61	3.84	2.62	2.42	3.05	2.77	2.46	2.22	1.87	1.74	1.66
19	2.14	3.32	3.46	2.62	3.34	2.66	2.66	2.76	2.11	2.15	1.73	1.64
20	2.26	3.05	2.95	3.25	3.85	2.22	2.52	2.48	2.13	1.95	1.84	1.64
21	2.50	2.70	2.77	3.89	3.42	2.14	2.66	2.57	2.65	1.90	1.73	1.68
22	2.30	2.65	2.60	3.22	3.10	2.52	2.56	2.39	1.91	1.83	1.72	1.62
23	2.26	2.52	2.86	2.46	2.88	2.41	2.45	2.32	-------	1.82	1.75	1.62
24	2.31	2.70	5.44	2.31	2.82	2.37	2.38	2.26	-------	2.16	1.81	1.66
25	2.20	3.21	4.19	2.22	2.68	2.16	2.40	2.21	1.75	1.94	1.84	1.69
26	2.16	3.30	3.35	2.46	2.55	2.56	2.35	2.22	-------	1.90	1.80	1.66
27	2.11	4.80	3.00	2.29	2.79	2.82	2.30	2.22	-------	1.92	1.80	1.62
28	2.10	6.15	2.96	2.20	2.72	3.30	2.20	2.05	-------	1.85	1.76	1.61
29	2.12	5.30	2.62	2.22	-------	3.26	2.20	2.07	2.22	1.82	1.77	1.62
30	2.04	4.10	2.49	2.28	-------	3.15	2.20	2.00	1.98	1.81	1.76	1.65
31	1.96	-------	2.42	2.30	-------	3.14	-------	2.04	-------	1.78	1.76	-------

Note.—Stage-discharge relation Dec. 21-23, Jan. 1-4, 12-19, 26-28, Feb. 10-11, 15-18 and Mar. 1-5 affected by ice. Gage height June 23-24, 26-28, July 10-13 and 16-17 unsatisfactory.

Daily discharge, in second-feet, of Laurel Hill Creek at Ursina, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	143	60	980	150	150	300	1,340	80	72	58	50	12
2	115	100	825	120	235	280	1,430	70	44	136	100	24
3	172	150	825	100	446	260	790	75	52	360	97	28
4	284	85	720	110	284	260	582	85	72	150	136	21
5	550	70	550	289	215	280	459	106	94	85	50	21
6	312	78	402	272	195	390	384	146	122	65	34	15
7	235	85	336	240	278	1,070	300	115	75	44	26	13
8	230	88	300	172	177	1,200	240	122	60	40	34	9.0
9	159	88	289	240	115	685	256	115	615	40	30	22
10	132	88	235	186	100	980	262	136	472	36	22	30
11	126	122	200	150	100	980	215	115	330	30	22	20
12	115	190	220	110	582	755	150	97	284	28	21	12
13	115	177	420	100	720	685	240	109	225	70	21	20
14	85	150	306	95	390	1,530	862	88	150	278	48	13
15	82	472	300	90	150	1,200	2,440	115	103	72	48	28
16	94	615	256	95	140	755	825	80	91	48	26	34
17	70	1,430	324	110	150	685	685	91	150	36	24	4.6
18	65	980	1,200	130	190	582	402	225	122	36	17	9.0
19	97	755	862	220	790	336	336	396	88	100	16	7.0
20	136	582	518	720	1,200	122	256	235	94	50	31	7.7
21	245	360	320	1,250	825	97	336	284	330	40	16	10
22	150	330	280	755	615	256	278	190	42	30	15	6.7
23	136	256	300	225	472	200	220	159	12	28	18	6.7
24	154	360	2,980	154	433	182	186	136	12	103	26	9.0
25	115	685	1,530	122	348	103	195	118	18	48	31	10
26	103	755	790	110	272	278	172	122	12	40	25	9.0
27	88	2,190	550	100	414	433	150	122	12	44	25	6.7
28	85	4,180	524	110	372	755	115	72	16	32	20	6.2
29	91	2,840	312	122	-------	720	115	78	122	28	21	6.7
30	70	1,430	240	143	-------	650	115	60	56	26	20	8.3
31	52	-------	205	150	-------	650	-------	70	-------	22	20	-------

Note.—Discharge Dec. 21-23, Jan. 1-4, 12-19, 26-28, Feb. 10-11, 15-18 and Mar. 1-5 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Stony Creek at Johnstown, Loyalhanna Creek at New Alexandria and Casselman River at Markleton. Discharge June 23-24, 26-28, July 10-13 and 16-17 estimated, because of unsatisfactory gage height record, from comparison of discharge graph with Casselman River at Markleton and Stony Creek at Johnstown.

Monthly discharge of Laurel Hill Creek at Ursina, for the year ending Sept. 30, 1922

(Drainage area 122 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	550	52	149	1.22	1.41
November	4,180	60	658	5.39	6.02
December	2,980	200	584	4.79	5.52
January	1,250	90	224	1.84	2.12
February	1,200	100	370	3.03	3.15
March	1,530	97	570	4.67	5.38
April	2,440	115	478	3.92	4.37
May	396	60	129	1.06	1.22
June	615	12	132	1.08	1.21
July	360	22	71.1	.583	.67
August	136	15	35.2	.289	.33
September	34	4.6	14.3	.117	.13
The Year	4,180	4.6	283	2.32	31.53

OHIO BASIN—STATION NO. 27

YOUGHIOGHENY RIVER AT CONNELLSVILLE

Location.—At two-span steel highway bridge between New Haven and Connellsville, Fayette County.

Drainage Area.—1,320 square miles.

Records Available.—July 22, 1908, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Peter M. Rulli. Elevation of gage zero 860.13 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rocks. Control is at a riffle about 500 feet below gage where bed is rock formation; permanent.

Extremes of Discharge.—Maximum stage during the year, 11.50 feet observed at 5 p. m. December 24 (discharge, 27,700 second-feet); minimum, 0.18 foot at 8 a. m. September 30 (discharge, 37 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 1,000 second-feet and well defined from 1,000 to 30,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Youghiogheny River at Connellsville, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
34	July 30	H. L. Landis	1.01	196
35	31	C. B. McElrath	1.00	244

Daily Mean Gage Height, in feet, of Youghiogheny River at Connellsville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.48	1.56	6.40	3.05	2.30	3.85	6.22	2.12	1.64	2.08	1.14	0.77
2	2.18	2.44	5.60	2.48	2.95	4.02	6.00	2.02	1.54	2.08	1.60	.76
3	2.36	2.48	5.79	2.28	4.17	4.45	5.05	1.99	1.78	2.78	1.38	.85
4	3.63	2.15	5.10	3.00	3.42	4.72	4.50	2.06	1.68	2.55	1.39	1.54
5	3.94	1.98	4.62	4.08	2.95	4.42	4.08	2.90	1.63	2.48	1.26	1.24
6	3.80	1.86	4.24	3.82	2.82	4.79	3.62	3.28	2.05	2.22	1.16	1.03
7	3.12	1.76	3.95	3.15	2.84	6.61	3.35	3.05	1.78	1.98	1.05	.94
8	2.89	1.74	3.75	2.90	2.55	7.12	3.25	2.78	1.55	1.78	.97	.85
9	2.65	1.70	3.58	2.92	2.18	5.72	3.16	2.54	2.38	1.60	.90	.81
10	2.46	1.85	3.35	2.85	2.58	5.32	2.98	2.42	3.00	1.52	.97	.66
11	2.20	1.89	3.22	2.80	3.08	5.70	2.85	2.42	2.60	1.40	.93	.62
12	2.04	2.08	3.62	2.38	4.71	5.98	2.78	2.38	3.06	1.30	.87	.77
13	1.92	2.20	4.10	2.10	5.40	5.30	2.70	2.30	2.80	1.48	.77	.71
14	1.79	2.17	3.90	2.71	4.68	4.94	4.51	2.18	2.30	2.48	.74	.70
15	1.68	3.08	3.58	5.81	4.15	7.54	8.83	2.08	2.02	2.25	.67	.68
16	1.59	3.40	3.26	3.01	3.58	8.25	7.02	1.98	1.82	1.78	.76	.67
17	1.55	4.60	3.41	2.35	3.46	6.25	5.50	1.94	1.74	1.48	.81	.58
18	1.52	5.57	6.34	2.48	3.16	5.15	4.96	2.41	1.82	1.40	.75	.58
19	1.58	4.62	6.25	4.01	3.33	4.52	4.50	4.24	1.74	1.49	.67	.44
20	1.84	4.15	4.98	7.14	5.61	4.18	4.02	4.10	1.65	1.50	.75	.46
21	2.12	3.72	4.38	6.65	5.88	3.82	3.62	3.45	1.48	1.32	.79	.51
22	2.22	3.35	3.92	6.30	4.92	3.48	3.38	2.98	1.40	1.18	.74	.46
23	1.95	3.05	4.41	5.00	4.65	3.15	3.24	2.65	1.32	1.08	.56	.45
24	1.76	3.39	9.90	3.98	4.32	3.55	2.95	2.50	1.26	1.10	.63	.39
25	1.65	5.75	8.88	3.42	3.82	3.60	2.76	2.38	1.19	1.32	.65	.45
26	1.59	5.53	6.45	3.05	3.41	3.38	2.68	2.28	1.12	1.40	1.08	.41
27	1.49	6.91	5.28	2.95	3.70	3.32	2.62	2.35	1.06	1.22	1.26	.43
28	1.53	9.70	4.50	2.82	4.50	4.32	2.50	2.16	1.17	1.12	1.04	.41
29	1.42	10.46	4.05	2.70	-------	4.35	2.30	1.98	2.79	1.06	.91	.30
30	1.39	7.68	3.52	2.45	-------	4.12	2.22	1.85	2.78	1.04	.85	.38
31	1.45	-------	3.18	2.32	-------	4.30	-------	1.72	-------	.99	.82	-------

Note.—Stage-discharge relation Jan. 14-18, Jan. 24 to Feb. 1, Feb. 17-19 and Mar. 1-3 affected by ice.

Daily discharge, in second-feet, of Youghiogheny River at Connellsville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,490	605	9,500	2,150	1,200	3,200	8,900	1,050	675	1,050	352	171
2	1,150	1,430	7,230	1,490	2,150	3,200	8,320	960	605	1,050	640	168
3	1,320	1,490	7,770	1,260	4,100	3,800	5,770	960	790	1,870	500	200
4	3,070	1,100	6,000	2,150	2,750	5,100	4,680	1,000	710	1,610	500	605
5	3,570	960	4,890	3,920	2,150	4,480	3,920	2,010	675	1,490	410	410
6	3,400	830	4,100	3,400	1,870	5,320	3,070	2,600	1,000	1,150	352	298
7	2,300	750	3,740	2,450	1,870	10,100	2,750	2,150	790	960	298	240
8	2,010	750	3,400	2,010	1,610	11,800	2,450	1,870	605	790	255	200
9	1,610	710	3,070	2,010	1,150	7,500	2,450	1,490	1,370	640	220	184
10	1,430	830	2,750	1,870	1,610	6,470	2,150	1,370	2,150	570	255	138
11	1,150	870	2,450	1,870	2,300	7,500	1,870	1,370	1,610	500	235	126
12	1,000	1,050	3,070	1,370	5,100	8,320	1,870	1,370	2,300	440	208	171
13	870	1,150	3,920	1,050	6,720	6,470	1,740	1,260	1,870	570	171	153
14	790	1,100	3,570	950	5,100	5,540	4,680	1,150	1,260	1,490	162	150
15	710	2,300	3,070	900	4,100	13,100	17,600	1,050	960	1,200	141	144
16	640	2,750	2,600	950	3,070	15,500	11,400	960	790	790	168	141
17	605	4,800	2,750	1,100	2,200	8,900	6,970	915	750	570	184	115
18	570	7,230	9,200	1,460	2,000	6,230	5,770	1,370	790	500	165	115
19	640	4,890	8,900	3,740	2,400	4,680	4,680	4,100	750	570	141	83
20	830	4,100	5,770	11,800	7,230	4,100	3,740	3,920	675	570	165	87
21	1,050	3,230	4,480	10,100	8,040	3,400	3,070	2,750	570	440	177	98
22	1,150	2,750	3,570	9,200	5,540	2,910	2,750	2,150	500	380	162	87
23	915	2,150	4,480	5,770	4,890	2,450	2,450	1,610	440	325	110	85
24	750	2,750	21,600	3,000	4,290	3,070	2,150	1,490	410	380	129	73
25	675	7,770	18,000	2,000	3,400	3,070	1,870	1,370	380	440	135	86
26	640	6,970	9,500	1,500	2,750	2,750	1,740	1,260	325	500	325	77
27	570	11,100	6,470	1,100	3,230	2,600	1,610	1,320	298	380	410	81
28	605	20,900	4,680	1,000	4,680	4,290	1,490	1,100	352	325	298	77
29	500	23,900	3,740	950	-------	4,480	1,260	960	1,870	298	225	55
30	500	13,800	2,910	900	-------	3,920	1,150	830	1,870	298	200	71
31	535	-------	2,450	950	-------	4,290	-------	710	-------	265	188	-------

Note.—Discharge Jan. 14-18, Jan. 24 to Feb. 1, Feb. 17-19 and Mar. 1-3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Youghiogheny River at Sutersville, Chartiers Creek at Carnegie and Loyalhanna Creek at New Alexandria.

Monthly discharge of Youghiogheny River at Connellsville, for the year ending Sept. 30, 1922

(Drainage area 1,320 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,570	500	1,200	0.909	1.05
November	23,900	605	4,500	3.41	3.81
December	21,600	2,450	5,790	4.39	5.06
January	11,800	900	2,730	2.06	2.38
February	8,040	1,150	3,480	2.64	2.75
March	15,500	2,450	5,760	4.36	5.03
April	17,600	1,150	4,140	3.14	3.50
May	4,100	710	1,560	1.18	1.36
June	2,300	298	938	.711	.79
July	1,870	265	723	.548	.63
August	640	110	254	.192	.22
September	605	55	156	.118	.13
The Year	23,900	55	2,600	1.97	26.71

OHIO BASIN—STATION NO. 28

YOUGHIOGHENY RIVER AT SUTERSVILLE

Location.—At three-span steel highway bridge, Sutersville, Westmoreland county.

Drainage Area.—1,680 square miles.

Records Available.—June 11, 1915, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Archie W. McGrew. Elevation of gage zero 733.14 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge.

Channel and Control.—Right bank is low and subject to overflow; left is high and does not overflow. Bed is composed of shifting sand and gravel overlaying a rocky bed. Control is at a riffle about 400 feet below gage at right side of stream; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 19.1 feet at 2 a. m. November 29 (discharge, about 47,200 second-feet); minimum, 2.11 feet from 5 p. m. September 29 to 5 p. m. September 30 (discharge, 57 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined between 400 and 1,600 second-feet and fairly well defined from 1,600 to 40,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

The following discharge measurement was made by H. L. Landis: No. 16, Aug. 1: Gage height, 3.02 feet; discharge, 472 second-feet.

Daily Mean Gage Height, in feet, of Youghiogheny River at Sutersville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.34	4.08	8.82	5.07	6.96	5.61	7.68	3.89	3.43	-------	2.93	2.54
2	4.19	4.23	7.77	4.78	7.16	5.86	-------	3.82	-------	-------	3.20	2.62
3	4.15	4.76	8.15	4.53	7.25	6.15	-------	3.77	-------	4.48	3.32	2.63
4	5.20	4.54	7.02	4.77	6.53	6.64	6.37	3.78	3.46	-------	-------	-------
5	5.54	4.26	6.52	5.77	4.96	7.11	5.87	4.44	3.37	-------	-------	3.06
6	5.61	3.98	6.12	5.78	4.66	7.29	5.47	-------	-------	-------	2.90	2.91
7	5.19	3.70	5.95	5.31	4.32	8.65	5.23	-------	-------	3.73	2.83	2.76
8	4.82	3.62	5.75	5.12	4.20	9.77	5.07	4.65	3.40	3.60	2.85	2.64
9	4.64	3.45	5.61	4.92	4.04	8.82	5.12	4.40	3.54	3.45	2.84	2.59
10	4.36	3.46	5.47	4.74	4.26	8.46	5.03	4.21	4.55	3.33	2.76	2.55
11	4.16	3.40	5.31	4.59	4.24	8.15	4.92	4.18	4.60	3.21	2.69	2.52
12	4.00	3.38	5.15	4.49	-------	-------	4.81	4.11	4.52	3.11	2.63	2.74
13	3.84	4.16	-------	4.39	7.56	-------	4.75	4.04	4.64	3.10	2.59	2.56
14	3.72	4.42	-------	4.33	7.16	-------	6.39	3.98	4.12	-------	2.53	2.45
15	3.63	4.95	-------	4.27	6.84	9.20	12.01	3.87	3.69	4.03	2.47	2.41
16	3.54	5.60	-------	4.42	6.47	-------	9.76	3.86	3.54	3.69	2.52	2.38
17	3.46	6.17	5.62	4.41	5.30	-------	7.29	3.80	3.50	3.35	-------	2.36
18	3.42	8.04	7.42	4.32	6.24	7.30	6.85	3.86	3.45	-------	2.51	2.35
19	3.44	7.42	8.37	5.38	5.52	6.53	6.32	6.12	3.42	3.24	2.52	2.34
20	3.58	6.20	6.87	8.88	6.73	5.91	5.83	-------	3.38	3.23	-------	2.31
21	3.95	5.80	6.22	8.76	7.78	5.67	5.45	5.31	3.34	3.10	-------	2.27
22	4.12	5.46	5.78	8.16	6.70	5.53	5.25	4.86	3.30	3.01	2.52	2.23
23	3.92	5.24	5.92	7.09	6.35	5.22	5.07	4.44	3.28	-------	2.47	2.20
24	3.72	5.25	12.37	5.97	6.08	5.01	4.85	4.24	3.28	2.89	2.46	2.18
25	3.58	6.50	13.67	5.57	5.97	5.40	4.69	4.11	3.27	3.08	2.58	2.16
26	3.50	7.75	9.70	5.82	5.82	5.19	4.56	4.09	3.26	-------	2.83	2.14
27	3.42	10.14	7.28	8.06	5.96	5.11	4.41	-------	3.25	3.05	3.13	2.13
28	3.34	14.01	6.29	8.66	6.21	6.01	4.27	-------	-------	3.00	2.87	2.12
29	3.34	17.36	5.86	8.36	-------	6.20	4.12	-------	-------	2.95	2.74	2.12
30	3.33	11.30	5.42	7.96	-------	6.30	3.98	-------	-------	2.87	2.63	2.11
31	3.45	-------	5.19	7.36	-------	6.27	-------	3.54	-------	2.82	2.57	-------

Note.—Gage height Dec. 13-16, Feb. 12, May 6, 7, July 1 and 2 not observed; Mar. 12-14, 16, 17, Apr. 2, 3, May 20, 27-30, June 2, 3, 6, 7, 28-30, July 4-6, 14, 18, 23, 26, Aug. 4, 5, 17, 20, 21 and Sept. 4 unsatisfactory. Stage-discharge relation Jan. 11-18, Jan. 25 to Feb. 3 and Feb. 15-19 affected by ice.

Daily discharge, in second-feet, of Youghiogheny River at Sutersville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,700	1,460	10,500	2,790	1,500	3,630	7,940	1,240	805	1,190	420	200
2	1,580	1,580	8,160	2,350	2,800	4,200	10,000	1,140	700	1,240	600	227
3	1,580	2,350	9,080	1,950	6,000	4,800	7,000	1,090	900	1,950	680	280
4	2,940	1,950	6,400	2,350	5,000	5,600	5,200	1,140	805	1,800	600	650
5	3,450	1,700	5,400	4,000	2,640	6,620	4,200	1,820	726	1,700	485	485
6	3,630	1,350	4,600	4,000	2,210	7,060	3,450	3,000	1,100	1,400	390	390
7	2,940	1,040	4,400	3,100	1,700	10,000	2,940	2,800	900	1,090	360	292
8	2,350	940	4,000	2,790	1,580	13,100	2,790	2,080	760	940	360	251
9	2,080	805	3,630	2,490	1,350	10,500	2,790	1,820	895	805	360	227
10	1,820	805	3,450	2,210	1,700	9,800	2,640	1,580	2,080	720	292	200
11	1,580	760	3,100	2,000	1,580	9,080	2,490	1,580	2,080	600	275	182
12	1,350	760	2,940	1,660	3,000	10,000	2,350	1,460	1,950	520	251	292
13	1,190	1,580	5,000	1,400	7,720	8,500	2,210	1,350	2,080	520	227	200
14	1,040	1,820	4,600	1,200	6,840	7,500	5,200	1,350	1,460	1,500	200	164
15	990	2,640	4,000	1,100	5,500	11,500	19,400	1,190	1,040	1,350	171	149
16	895	3,630	3,400	1,200	3,600	19,000	13,100	1,190	895	1,040	182	138
17	805	4,800	3,630	1,300	2,800	11,000	7,060	1,140	850	720	200	131
18	760	8,600	7,280	1,600	2,600	7,060	6,000	1,190	805	550	182	128
19	805	7,280	9,560	3,270	3,000	5,400	5,000	4,600	760	640	182	124
20	940	4,800	6,200	10,700	5,800	4,200	4,000	5,000	760	640	182	114
21	1,200	4,000	4,800	10,500	8,160	3,810	3,270	3,100	720	520	200	101
22	1,460	3,450	4,000	9,080	5,800	3,450	2,940	2,490	680	450	182	89
23	1,240	2,940	4,200	6,620	5,200	2,940	2,790	1,820	680	380	171	80
24	1,040	2,940	20,700	4,400	4,600	2,640	2,350	1,580	680	390	167	75
25	940	5,400	25,000	2,600	4,400	3,270	2,210	1,460	640	520	227	70
26	850	8,160	12,800	1,800	4,000	2,940	2,080	1,460	640	600	360	64
27	760	13,900	7,060	1,400	4,400	2,790	1,820	1,600	640	485	560	62
28	720	26,100	5,000	1,300	4,800	4,400	1,700	1,200	750	450	360	59
29	720	39,700	4,200	1,200	-------	4,800	1,460	1,100	2,600	420	292	59
30	720	17,300	3,270	1,200	-------	5,000	1,350	1,000	2,200	360	251	57
31	805	-------	2,940	1,200	-------	5,000	-------	895	-------	330	200	-------

Note.—Discharge estimated, Dec. 13-16, Feb. 12, May 6,7, July 1 and 2, because of no gage height record; Mar. 12-14, 16, 17, Apr. 2, 3, May 20, 27-30, June 2, 3, 6, 7, 28-30, July 4-6, 14, 18, 23, 26, Aug. 4, 5, 17, 20, 21 and Sept. 4, because of unsatisfactory gage height record, from record of Youghiogheny River at Connellsville. Discharge Jan. 11-18, Jan. 25 to Feb. 3 and Feb. 15-19 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Youghiogheny River at Connellsville, Chartiers Creek at Carnegie, Turtle Creek near Trafford and Loyalhanna Creek at New Alexandria.

Monthly discharge of Youghiogheny River at Sutersville, for the year ending Sept. 30, 1922

(Drainage area 1,680 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	3,630	720	1,459	0.863	1.00
November	39,700	760	5,820	3.46	3.86
December	25,000	2,940	6,560	3.90	4.50
January	**10,700**	**1,100**	**3,060**	**1.82**	**2.10**
February	8,160	1,350	3,940	2.35	2.45
March	19,000	2,640	6,760	4.02	4.64
April	19,400	1,350	4,590	2.73	3.05
May	5,000	895	1,790	1.07	1.23
June	2,600	640	1,090	.649	.72
July	1,950	320	833	.496	.57
August	680	167	309	.184	.21
September	650	57	185	.110	.12
The Year	39,700	57	3,020	1.80	24.45

OHIO BASIN—STATION NO. 29

TURTLE CREEK NEAR TRAFFORD

Location.—At single-span steel highway bridge, Blackburn Station, Pennsylvania Railroad, about one and a quarter miles northeast of Trafford, Westmoreland County.

Drainage Area.—55 square miles.

Records Available.—July 28, 1914, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by S. T. Churchfield.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of hardpan and gravel; practically permanent. Control is at a riffle about 50 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 4.8 feet at 8 p. m. November 28 (discharge, about 2,180 second-feet); minimum, 0.20 foot at 5 p. m. September 30 (discharge, 0.5 second-foot).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 300 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for high stages when they are fair.

The following discharge measurement was made by C. B. McElrath: No. 25, Aug. 2: Gage height, 0.74 foot; discharge, 7.17 second-feet. Measurement made by wading at gage.

Daily Mean Gage Height, in feet, of Turtle Creek near Trafford, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.06	-------	2.18	1.25	1.40	1.27	2.11	0.96	0.77	0.96	0.44	0.34
2	1.02	-------	2.05	1.21	1.52	1.46	2.08	.92	.77	2.14	.56	.65
3	1.07	1.32	1.80	1.17	1.42	1.39	1.91	.92	1.26	2.74	.65	.62
4	1.04	1.29	1.67	1.55	1.30	1.41	1.73	1.25	1.32	2.14	.56	.56
5	.96	1.25	1.59	1.68	1.21	2.04	1.47	1.50	1.23	1.59	.51	.51
6	.91	1.22	1.52	1.52	1.13	3.14	1.34	1.58	1.15	1.19	.47	.47
7	.87	1.19	1.46	1.42	1.05	3.49	1.23	1.51	1.06	1.11	.43	.44
8	.90	1.15	1.41	1.37	.98	2.91	1.29	1.43	1.01	1.03	.59	.42
9	.93	1.15	1.37	1.32	.95	2.21	1.26	1.30	.99	.93	.62	.40
10	.94	1.21	1.32	1.22	.98	1.91	1.18	1.17	1.10	.88	.56	.38
11	.92	1.17	1.27	1.19	1.29	2.16	1.21	1.07	1.14	.82	.51	.38
12	.90	1.30	1.40	1.17	1.73	2.11	1.22	.97	1.10	.78	.47	.60
13	.86	1.29	1.47	1.11	1.61	1.91	1.14	.88	1.03	.74	.44	.56
14	.84	1.46	1.39	1.08	1.49	1.80	1.55	.85	.96	.69	.42	.52
15	.81	1.35	1.32	1.13	1.43	1.72	3.27	.83	.90	.64	.40	.50
16	.78	1.50	1.30	1.18	1.38	1.62	2.75	.80	.83	.60	.37	.48
17	.74	2.45	1.29	1.20	1.34	1.51	2.10	.83	.85	.66	.34	.46
18	.72	2.54	1.47	1.16	1.37	1.39	1.65	.97	.89	.96	.34	.44
19	.74	2.27	1.51	1.52	1.92	1.33	1.40	1.29	.87	.91	.45	.42
20	.77	2.05	1.47	1.52	2.02	1.29	1.31	1.46	.83	.85	.46	.40
21	.81	1.85	1.39	1.62	1 82	1.25	1.36	1.44	.79	.80	.41	.38
22	.78	1.50	1.35	1.60	1.72	1.21	1.25	1.37	.75	.71	.37	.35
23	.76	1.29	1.90	1.50	1.63	1.17	1.18	1.31	.72	.66	.34	.32
24	.74	2.40	2.75	1.36	1.54	1.16	1.14	1.23	.70	.62	.41	.30
25	.71	2.27	2.30	1.62	1.38	1.14	1.11	1.12	.67	.58	.51	.30
26	.68	2.26	2.05	1.92	1.28	1.09	1.14	1.17	.64	.54	.47	.28
27	-------	3.23	1.85	1.95	1.45	1.49	1.12	1.12	.62	.50	.45	.26
28	-------	4.34	1.65	1.89	1.35	1.91	1.08	1.02	.90	.46	.43	.24
29	-------	3.50	1.48	1.80	-------	1.78	1.04	.94	1.11	.43	.40	.22
30	-------	2.45	1.38	1.62	-------	2.09	1.00	.86	1.04	.41	.38	.20
31	-------	-------	1.29	1.50	-------	2.06	-------	.81	-------	.40	.36	-------

Note.—Gage height Oct. 27 to Nov. 2 not observed.
Stage-discharge relation Jan. 1-3, 8-19, Jan. 23 to Feb. 5 and Feb. 10-19 affected by ice.

Daily discharge, in second-feet, of Turtle Creek near Trafford, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	80	369	55	40	64	323	24	9.2	24	2.2	1.4
2	30	130	301	46	65	100	323	20	9.2	346	3.6	5.2
3	36	73	199	46	70	85	241	20	63	658	5.2	4.6
4	33	67	156	122	55	89	175	61	73	346	3.6	3.6
5	24	61	132	159	55	301	102	109	58	132	2.9	2.9
6	19	56	114	114	44	873	76	130	46	52	2.5	2.5
7	16	52	100	91	34	1,140	58	112	35	41	2.2	2.2
8	18	46	80	80	26	747	67	94	29	32	4.0	2.1
9	21	46	82	70	23	369	63	69	27	21	4.6	1.9
10	22	55	73	55	28	241	50	49	40	17	3.6	1.7
11	20	49	64	40	40	346	55	36	45	12	2.9	1.7
12	18	69	87	34	100	323	56	25	40	9.7	2.5	4.2
13	15	67	102	34	130	241	45	17	32	7.8	2.2	3.6
14	14	100	85	28	85	199	122	14	24	6.2	2.1	3.1
15	12	78	73	28	70	172	1,000	13	18	5.0	1.9	2.8
16	9.7	109	69	28	40	141	658	11	13	4.2	1.6	2.6
17	7.8	493	67	34	34	112	323	13	14	5.4	1.4	2.4
18	7.0	546	102	40	46	85	150	25	17	24	1.4	2.2
19	7.8	392	112	55	110	74	87	67	16	19	2.3	2.1
20	9.2	301	102	114	279	67	71	100	13	14	2.4	1.9
21	12	218	85	141	207	61	80	96	10	11	2.0	1.7
22	9.7	109	78	135	172	55	61	82	8.2	6.7	1.6	1.5
23	8.7	67	237	85	144	49	50	71	7.0	5.4	1.4	1.3
24	7.8	467	658	60	119	48	45	58	6.4	4.6	2.0	1.1
25	6.7	393	417	46	83	45	41	43	5.6	3.9	2.9	1.1
26	5.9	393	301	40	66	39	45	49	5.0	3.3	2.5	1.0
27	6.0	950	218	40	98	107	43	43	4.6	2.8	2.3	0.9
28	6.0	1,710	150	38	78	241	38	30	18	2.4	2.2	0.8
29	6.0	1,140	105	34	-------	192	35	22	11	2.2	1.9	0.6
30	6.0	493	83	34	-------	323	28	15	33	2.0	1.7	0.5
31	11	-------	67	34	-------	301	-------	12	-------	1.9	1.6	-------

Note.—Discharge estimated, Oct. 27 to Nov. 2, because of no gage height record, from records for adjacent streams; Jan. 1-3, 8-19, Jan. 23 to Feb. 5 and Feb. 10-19, because of ice, from weather records, study of gage height graph and comparison with similar studies for Chartiers Creek at Carnegie, Blacklick Creek at Blacklick, Loyalhanna Creek at New Alexandria and Crooked Creek at Hileman's Farm.

Monthly discharge of Turtle Creek near Trafford, for the year ending Sept. 30, 1922
(Drainage area 55 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	36	5.9	14.8	0.269	0.31
November	1,710	46	294	5.35	5.97
December	658	64	157	2.85	3.29
January	159	28	63.2	1.15	1.33
February	279	23	88.6	1.52	1.58
March	1,140	39	233	4.24	4.89
April	1,000	28	150	2.73	3.05
May	130	11	49.4	.898	1.04
June	73	4.6	25.3	.460	.51
July	658	1.9	58.8	1.07	1.23
August	5.2	1.4	2.49	.045	.05
September	5.2	.5	2.17	.039	.04
The Year	1,710	.5	94.4	1.72	23.29

OHIO BASIN—STATION NO. 30

CHARTIERS CREEK AT CARNEGIE

Location.—At single-span steel railroad bridge, siding of the Chartiers Branch, Pittsburgh, Cincinnati, Chicago & St. Louis R. R., Carnegie, Allegheny County.

Drainage Area.—260 square miles.

Records Available.—June 5, 1915, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Richard Musiol and F. J. Wenger.

Discharge Measurements.—Made from upstream side of railroad bridge, branch line, about 100 feet above the gage.

Channel and Contol.—Both banks are high and not subject to overflow. Bed is composed of mud and slag over a rocky floor. Control is at the first of a series of riffles about 600 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 9.61 feet observed at 7 a. m. April 1 (discharge, 5,720 second-feet); minimum, 1.48 feet at 7 a. m. September 11 (discharge, 23 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year. Rating curve fairly well defined below 2,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

The following discharge measurement was made by H. L. Landis: No. 19, Aug. 3: Gage height, 1.75 feet; discharge, 36.5 second-feet.

Daily Mean Gage Height, in feet, of Chartiers Creek at Carnegie, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.82	4.77	4.19	3.03	2.43	2.80	8.06	2.58	1.91	2.16	1.60	1.62
2	2.47	4.05	4.09	2.80	3.24	3.03	5.21	2.54	1.92	3.56	1.73	2.25
3	2.53	3.25	3.98	2.93	2.77	2.92	4.41	2.57	2.06	3.43	1.82	2.12
4	2.57	2.90	3.72	3.36	2.44	3.34	4.16	2.82	2.20	2.86	2.38	2.04
5	2.48	2.70	3.67	4.24	2.39	3.84	3.86	3.16	2.20	2.47	1.96	1.99
6	2.37	2.53	3.65	3.64	2.54	4.88	3.61	3.48	2.21	2.22	1.80	1.76
7	2.33	2.44	3.63	3.19	2.47	6.17	3.43	2.94	2.06	2.18	1.68	1.62
8	2.35	2.36	3.61	3.00	2.21	5.00	3.59	2.78	2.04	2.03	2.29	1.58
9	2.32	2.38	3.53	3.03	2.19	4.20	3.46	2.63	2.52	2.03	2.05	1.57
10	2.25	2.56	3.39	2.93	2.31	3.94	3.35	2.66	2.20	1.98	1.72	1.52
11	2.17	2.76	3.33	2.69	2.61	4.97	3.43	2.80	2.04	1.90	1.68	1.74
12	2.11	3.23	3.53	2.74	2.89	4.42	3.29	2.56	2.52	1.86	1.62	2.50
13	2.05	3.47	3.49	2.83	3.77	3.67	3.40	2.45	2.13	1.86	1.58	2.00
14	2.01	3.51	3.43	2.69	2.83	3.82	5.19	2.40	2.00	1.86	1.55	1.74
15	1.98	3.91	3.31	2.58	2.69	5.84	8.11	2.36	1.92	1.84	1.55	1.62
16	1.97	3.61	3.24	2.47	2.37	4.67	5.51	2.35	1.89	1.84	1.55	1.54
17	1.97	5.01	3.66	2.46	2.53	3.96	4.76	2.36	2.17	1.83	1.55	1.53
18	1.97	4.67	4.68	2.66	2.60	3.59	4.36	2.46	2.55	1.90	1.55	1.52
19	2.02	3.45	3.96	3.56	3.61	3.40	4.19	2.73	2.10	2.02	1.64	1.52
20	2.13	3.66	3.63	3.57	3.71	3.34	3.90	2.68	1.99	1.98	1.60	1.52
21	2.12	3.61	3.49	3.03	3.33	3.34	3.56	2.38	1.93	1.86	1.59	1.51
22	2.01	3.46	3.19	3.38	3.23	3.17	3.43	2.34	1.88	1.77	1.58	1.51
23	1.95	3.24	3.69	3.02	3.28	3.05	3.33	2.26	1.85	1.74	1.54	1.51
24	1.87	4.09	7.12	2.60	3.13	2.98	3.17	2.19	1.75	1.78	1.58	1.51
25	1.89	4.51	5.59	2.64	2.87	2.94	3.07	2.12	1.66	1.89	1.74	1.51
26	1.87	5.06	4.27	2.67	2.74	2.89	3.01	2.17	1.61	1.79	1.68	1.51
27	1.83	6.35	3.98	2.59	3.02	3.35	2.99	2.15	1.82	1.74	1.63	1.51
28	1.83	7.43	3.68	2.60	3.05	4.87	2.94	2.07	4.18	1.73	1.59	1.51
29	1.83	6.07	3.47	2.53	-------	4.53	2.75	1.99	3.26	1.71	1.58	1.53
30	1.79	4.85	3.28	2.37	-------	5.13	2.68	1.99	2.48	1.68	1.70	1.54
31	2.95	-------	3.22	2.40	-------	5.79	-------	1.97	-------	1.63	1.64	-------

Daily discharge, in second-feet, of Chartiers Creek at Carnegie, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	230	1,200	840	308	146	230	3,970	190	64	97	33	35
2	154	735	785	230	380	308	1,470	170	65	510	45	111
3	170	380	735	275	218	260	960	170	83	462	54	91
4	170	260	585	420	148	420	840	230	103	245	136	80
5	156	205	560	840	138	660	660	342	103	154	70	74
6	134	170	560	560	170	1,260	535	485	105	106	52	48
7	126	148	560	360	154	2,210	462	275	83	100	40	35
8	130	132	535	290	105	1,330	535	230	80	79	118	31
9	124	136	510	308	102	840	462	192	160	79	81	31
10	111	170	440	275	122	710	420	192	103	73	44	27
11	98	218	420	205	180	1,330	462	230	80	63	40	46
12	90	420	510	218	260	960	400	170	160	59	35	160
13	81	462	485	245	610	560	440	150	92	59	31	75
14	76	485	462	205	245	635	1,470	140	75	59	29	46
15	73	685	400	180	205	1,890	3,970	132	65	56	29	35
16	71	535	380	154	134	1,140	1,680	130	62	56	29	28
17	71	1,330	560	152	170	710	1,200	132	98	55	29	27
18	71	1,140	1,140	192	180	535	960	152	170	63	29	27
19	78	462	710	510	535	440	840	218	88	78	37	27
20	92	560	560	510	585	420	685	205	74	73	33	27
21	91	535	485	308	420	420	510	136	67	59	32	26
22	76	440	360	446	380	342	462	128	61	49	31	26
23	69	380	585	200	400	308	420	113	58	46	28	26
24	60	785	2,990	180	342	290	342	102	47	50	31	26
25	62	1,020	1,750	192	245	275	308	91	38	62	46	26
26	60	1,400	900	192	218	260	290	98	34	51	40	26
27	55	2,370	735	180	290	420	290	96	54	46	36	26
28	55	3,270	585	180	308	1,260	275	84	840	45	32	26
29	55	2,130	462	170	-------	1,020	218	74	380	43	31	27
30	51	1,200	400	134	-------	1,400	205	74	156	40	42	28
31	275	-------	360	140	-------	1,890	-------	71	-------	36	37	-------

Monthly discharge of Chartiers Creek at Carnegie, for the year ending Sept. 30, 1922

(Drainage area 260 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	275	51	104	0.400	0.46
November	3,270	132	779	3.00	3.35
December	2,900	360	689	2.65	3.06
January	840	134	285	1.10	1.27
February	610	102	264	1.02	1.06
March	2,210	230	798	3.07	3.54
April	3,970	205	858	3.30	3.68
May	485	71	167	.642	.74
June	840	34	122	.469	.52
July	510	36	98.5	.379	.44
August	136	28	44.5	.171	.20
September	160	26	44.1	.170	.19
The Year	3,970	26	354	1.36	18.51

OHIO BASIN—STATION NO. 31

SHENANGO RIVER NEAR TURNERVILLE

Location.—At single-span steel highway bridge, about one half mile east of Turnerville, Crawford County.

Drainage Area.—152 square miles.

Records Available.—February 1, 1912, to August 31, 1922, when the station was discontinued.

Gage.—Standard chain attached to downstream side of bridge; read by S. A. Marvin. Elevation of gage zero 970.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left begins to overflow at a stage of about 10.7 feet. Bed is composed of silt and gravel. Control is at a clay and boulder riffle about 200 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the period October 1 to August 31, estimated from hydrograph, 11.5 feet at 2 p. m. November 3 (discharge, 2,040 second-feet); minimum, 3.60 feet at 7 a. m. August 19 (discharge, 4.1 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 1,200 second-feet and fairly well defined between 1,200 and 5,000 second-feet. Gage read to quarter tenths once daily. Daily discharge ascertained by applying daily mean gage height, computed from a continuous daily hydrograph, obtained by plotting chain gage readings, to rating table. Results good.

The following discharge measurement was made by C. B. McElrath: No. 88, Feb. 21, 1922: Gage height, 5.19 feet; discharge, 148 second-feet. Measurement was made through complete ice cover 100 feet upstream from the weir, located at upstream side of bridge. Weir was free from ice and control riffle below gage was open.

Daily Mean Gage Height, in feet, of Shenango River at Turnerville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.23	6.00	5.88	4.62	4.21	4.79	10.36	4.55	4.13	4.38	-------	-------
2	4.23	9.56	5.98	4.56	4.64	5.21	9.18	4.46	4.06	4.40	-------	-------
3	4.23	11.34	5.93	4.46	4.83	4.81	7.90	4.45	4.01	4.42	-------	-------
4	4.26	10.89	5.68	4.74	4.74	4.64	7.01	4.45	4.00	4.42	5.99	-------
5	4.53	9.18	5.63	6.12	5.02	4.71	6.50	4.48	3.96	4.38	6.06	-------
6	4.58	7.72	5.63	6.24	5.26	4.82	6.06	4.51	3.95	-------	5.75	-------
7	4.65	6.85	5.58	7.21	4.98	6.22	5.85	4.55	3.93	-------	5.40	-------
8	5.15	6.30	5.43	7.69	4.78	6.63	5.70	4.55	3.93	4.17	5.12	-------
9	5.56	6.00	5.33	6.47	4.71	6.87	5.53	4.51	3.91	4.02	4.80	-------
10	5.63	6.11	5.23	5.55	4.74	7.44	5.71	4.46	3.91	3.90	4.55	-------
11	5.93	6.47	5.23	5.10	5.25	8.47	6.75	4.43	3.97	3.81	4.30	-------
12	6.20	7.02	5.43	4.86	5.87	9.49	6.53	4.36	4.19	3.74	4.06	-------
13	6.24	7.35	5.52	4.84	5.75	9.60	6.61	4.28	4.26	3.69	3.82	-------
14	6.06	7.06	5.56	4.79	6.05	8.36	6.93	4.20	4.25	3.68	3.77	-------
15	5.97	6.96	5.65	4.70	6.26	7.44	7.32	4.13	4.20	3.68	3.70	-------
16	5.90	6.65	-------	4.65	5.90	6.84	7.09	4.08	4.13	3.70	3.66	-------
17	5.77	7.56	5.85	4.60	5.15	6.37	6.96	4.05	4.01	3.76	3.64	-------
18	5.49	8.80	6.18	4.61	4.81	5.89	6.71	4.03	3.95	4.54	3.62	-------
19	5.18	11.10	5.93	4.83	4.83	5.60	6.33	4.04	3.86	4.30	3.61	-------
20	5.04	11.01	6.06	5.00	5.25	5.38	6.13	4.21	3.83	4.25	-------	-------
21	5.07	9.60	6.16	5.03	5.27	5.28	5.87	4.28	3.80	4.22	-------	-------
22	5.01	8.10	5.82	4.91	5.71	5.19	5.63	4.35	3.76	4.22	-------	-------
23	4.87	7.23	5.74	4.85	6.43	5.16	5.39	4.36	3.76	-------	-------	-------
24	4.88	6.75	5.47	4.92	7.36	5.28	5.19	4.38	3.74	-------	-------	-------
25	4.98	6.58	-------	4.81	7.62	5.73	5.06	4.48	3.74	-------	-------	-------
26	4.93	6.28	-------	4.62	6.74	6.03	4.98	4.53	3.75	-------	-------	-------
27	4.83	6.18	5.06	4.51	6.16	6.55	4.91	4.55	3.82	-------	-------	-------
28	4.76	6.23	4.88	4.36	5.42	7.43	4.81	4.45	4.06	-------	-------	-------
29	4.63	6.18	4.86	4.22	-------	8.15	4.71	4.38	4.26	-------	-------	-------
30	4.58	5.93	4.58	4.16	-------	8.74	4.61	4.31	4.39	-------	-------	-------
31	4.52	-------	4.71	4.15	-------	10.42	-------	4.23	-------	-------	-------	-------

Note.—Gage height not observed on days of no record. Stage-discharge relation Dec. 29 to Jan. 5, Jan. 13-18, Feb. 9-21 and Mar. 2 and 3 affected by ice. Station was discontinued on August 31, 1922.

Daily discharge, in second-feet, of Shenango River near Turnerville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	301	269	48	38	104	1,410	74	31	55	220	-------
2	40	1,080	285	48	86	100	960	64	26	57	130	-------
3	40	1,900	269	60	110	100	638	63	23	59	150	-------
4	43	1,660	237	90	98	86	458	63	22	59	285	-------
5	74	960	221	160	130	92	369	66	20	55	301	-------
6	80	596	221	318	168	104	301	68	19	55	253	-------
7	86	422	221	496	130	318	253	74	18	45	190	-------
8	152	335	198	596	104	386	237	74	18	35	145	-------
9	221	285	182	369	90	440	205	68	17	23	104	-------
10	221	301	168	221	85	535	237	64	17	16	74	-------
11	269	369	168	145	100	779	422	60	20	12	47	-------
12	318	458	198	110	200	1,050	369	53	36	8.5	26	-------
13	318	535	205	100	280	1,080	386	45	43	6.6	12	-------
14	301	477	221	85	260	754	440	37	42	6.5	9.7	-------
15	285	458	221	75	220	535	515	31	37	6.5	7.0	-------
16	269	386	220	60	180	422	477	28	31	7.0	5.7	-------
17	253	575	253	60	140	352	458	26	23	9.3	5.1	-------
18	205	854	318	70	110	269	404	24	19	74	4.6	-------
19	160	1,780	269	110	110	221	335	25	14	47	4.3	-------
20	138	1,720	301	130	120	190	301	38	12	42	4.8	-------
21	138	1,080	318	138	170	175	269	45	11	39	7.7	-------
22	130	683	253	116	237	160	221	52	9.3	39	8.9	-------
23	110	496	237	110	352	152	190	53	9.3	36	5.4	-------
24	116	422	198	116	535	175	160	55	8.5	22	5.4	-------
25	130	386	160	104	575	237	138	66	8.5	16	4.6	-------
26	123	335	150	80	404	285	130	74	8.9	14	7.0	-------
27	110	318	138	68	318	386	116	74	12	16	6.3	-------
28	98	318	116	53	190	535	104	63	26	11	6.3	-------
29	86	318	85	39	-------	706	92	55	43	8.9	7.0	-------
30	80	269	55	34	-------	829	80	48	56	8.9	6.3	-------
31	68	-------	48	33	-------	1,410	-------	40	-------	17	5.4	-------

Note.—Discharge estimated Dec. 16, 25, 26, July 6, 7, July 23 to Aug. 3 and Aug. 20-31, because of no gage height record, from records for adjacent streams; Dec. 29 to Jan. 5, Jan. 13-18, Feb. 9-21 and Mar. 2 and 3, because of ice, from discharge measurement, weather records, study of gage height graph and comparison with similar studies for Shenango River near Jamestown, Little Shenango River at Greenville and Pymatuning Creek near Orangeville. Station was discontinued on August 31, 1922.

Monthly discharge of Shenango River near Turnerville, for the year ending Sept. 30, 1922

(Drainage area 152 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	318	40	152	1.00	1.15
November	1,900	269	669	4.40	4.91
December	318	48	207	1.36	1.57
January	596	33	137	.901	1.04
February	575	38	198	1.30	1.35
March	1,410	86	418	2.75	3.17
April	1,410	80	356	2.34	2.61
May	74	24	53.9	.355	.41
June	56	8.5	22.7	.149	.17
July	74	6.3	29.2	.192	.22
August	301	4.3	66.1	.435	.50
September	-------	-------	-------	-------	-------
The Year	-------	-------	-------	-------	-------

Note.—Station was discontinued on August 31, 1922.

OHIO BASIN—STATION NO. 32

SHENANGO RIVER NEAR JAMESTOWN

Location.—At two-span steel highway bridge, known as Frye Bridge, about one and one-half miles downstream from Jamestown, Mercer County.

Drainage Area.—182 square miles.

Records Available.—December 2, 1919, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Hugh P. McClimans. Elevation of gage zero 955.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is low and overflow begins at a stage of 7 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control is at a riffle about 50 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, estimated from hydrograph, 7.4 feet at 10 p. m. November 3 (discharge, about 2,000 second-feet); minimum, 1.16 feet at 5 p. m. August 24 and 31, 5 p. m. September 9, 7.30 a. m. September 23, 5 p. m. September 26, 7 a. m. September 27 and 5 p. m. September 30 (discharge, 4.9 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined below 1,600 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Shenango River near Jamestown, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
17	Oct. 13	R. J. Ferris	3.22	372
18	Nov. 2	do	5.89	1,330
19	2	do	5.78	1,330
20	2	do	5.74	1,310
21	Dec. 21	C. B. McElrath	3.09	355
22	Feb. 24	do	3.85	571
23	24	do	3.84	576
24	Mar. 8	do	3.58	501
25	8	do	3.55	488
26	12	do	5.43	1,190
27	12	do	5.44	1,170
28	13	do	5.99	1,400
29	14	do	4.83	962
30	14	do	4.78	964
31	14	do	4.72	971
32	Aug. 8	H. L. Landis	2.20	159

Daily Mean Gage Height, in feet, of Shenango River near Jamestown, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.65	3.22	2.75	2.04	1.92	2.37	6.35	1.87	1.57	1.80	2.55	1.20
2	1.64	5.60	2.73	2.29	2.50	2.57	5.50	1.82	1.48	1.71	2.24	1.28
3	1.62	6.81	3.15	2.32	2.56	2.29	4.45	1.84	1.50	1.88	2.45	1.25
4	1.66	6.89	2.81	2.32	2.41	2.22	3.80	1.88	1.48	1.82	2.90	1.57
5	1.94	5.54	2.72	3.56	2.58	2.23	3.40	1.85	1.46	1.76	2.98	1.36
6	1.94	4.28	2.70	3.52	2.88	2.35	3.09	1.81	1.42	1.72	2.75	1.29
7	1.90	3.61	2.64	3.78	2.71	3.61	2.85	2.06	1.40	1.74	2.51	1.28
8	2.43	3.21	2.56	3.96	2.45	3.69	2.66	1.94	1.38	1.70	2.26	1.25
9	2.75	3.23	2.49	3.42	2.42	3.68	2.50	1.84	1.38	1.61	2.05	1.18
10	2.68	3.31	2.42	2.69	2.39	4.00	2.47	1.83	1.64	1.51	1.91	1.22
11	2.85	3.36	2.38	2.31	3.38	5.10	3.75	1.76	1.63	1.45	1.76	1.24
12	3.13	3.74	2.64	2.13	3.60	5.60	3.63	1.73	1.61	1.37	1.60	1.24
13	3.26	3.96	2.64	2.28	3.36	5.81	3.52	1.71	1.66	1.31	1.48	1.26
14	3.10	3.78	2.67	2.30	3.16	4.84	3.64	1.62	1.63	1.27	1.36	1.34
15	3.00	3.78	2.72	2.26	3.62	4.14	4.13	1.60	1.59	1.29	1.31	1.28
16	3.00	3.76	2.72	2.36	3.33	3.62	3.78	1.57	1.50	1.30	1.26	1.26
17	2.82	4.59	2.94	2.56	2.76	3.24	3.72	1.52	1.45	1.35	1.24	1.24
18	2.60	5.49	3.41	2.34	2.48	2.85	3.52	1.56	1.39	1.87	1.27	1.22
19	2.38	6.97	3.04	2.53	2.61	2.60	3.28	1.57	1.33	1.79	1,27	1.21
20	2.31	7.05	3.08	2.73	3.04	2.42	3.06	1.71	1.30	1.74	1.24	1.20
21	2.34	5.95	3.12	2.56	2.86	2.37	2.85	1.72	1.30	1.73	1.29	1.20
22	2.28	4.67	2.81	2.39	3.32	2.30	2.59	1.72	1.30	1.66	1.26	1.20
23	2.15	3.92	2.70	2.48	3.50	2.28	2.40	1.73	1.28	1.59	1.23	1.18
24	2.10	3.65	2.56	2.49	3.82	2.36	2.28	1.74	1.22	1.44	1.19	1.20
25	2.14	3.47	2.39	2.43	3.60	2.68	2.18	2.03	1.26	1.40	1.21	1.17
26	2.14	3.25	2.43	2.30	3.48	2.86	2.12	2.24	1.26	1.35	1.25	1.16
27	2.09	3.24	2.34	2.18	3.14	3.27	2.09	1.90	1.28	1.38	1.21	1.17
28	2.03	3.34	2.27	2.02	2.69	4.00	2.03	1.80	1.48	1.32	1.21	1.18
29	1.94	3.16	2.09	1.92	-------	4.55	1.96	1.74	1.96	1.29	1.24	1.18
30	1.90	2.91	2.17	1.86	-------	5.27	1.92	1.67	1.72	1.26	1.24	1.16
31	1.89	-------	2.36	1.83	-------	6.36	-------	1.62	-------	1.42	1.20	-------

Note.—Stage-discharge relation Dec. 28 to Jan. 6, Jan. 13-18, Jan. 23 to Feb. 21 and Mar. 1-5 affected by ice.

Daily discharge, in second-feet, of Shenango River near Jamestown, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	390	268	60	55	150	1,560	85	38	70	224	6.5
2	47	1,240	268	60	90	110	1,200	74	28	56	158	11
3	44	1,730	390	70	140	100	780	77	30	84	202	9.0
4	49	1,780	280	100	110	100	570	84	28	74	304	35
5	96	1,200	257	190	130	110	450	79	26	64	330	17
6	96	745	257	400	160	180	360	72	22	58	268	11
7	88	510	246	570	170	510	292	117	20	61	213	11
8	202	390	224	640	150	540	246	96	18	55	158	9.0
9	268	390	213	450	110	540	213	77	18	42	117	5.6
10	257	420	191	257	100	640	202	75	47	31	90	7.4
11	292	450	191	169	130	1,040	570	64	45	25	64	8.4
12	360	510	246	138	240	1,240	510	60	42	18	41	8.4
13	420	640	246	130	320	1,320	480	56	49	13	28	9.5
14	360	570	246	100	320	920	510	44	45	10	17	15
15	330	570	257	90	260	675	675	41	40	11	13	11
16	330	570	257	80	220	510	570	38	30	12	9.5	9.5
17	280	850	317	80	170	390	540	32	25	16	8.4	8.4
18	235	1,200	450	80	150	292	480	37	19	83	10	7.4
19	191	1,830	330	224	140	235	420	38	14	68	10	6.9
20	169	1,830	360	268	150	191	360	56	12	61	8.4	6.5
21	180	1,400	360	224	220	180	292	58	12	60	11	6.5
22	169	885	280	191	420	169	235	58	12	49	9.5	6.5
23	138	605	257	160	480	169	191	60	11	40	7.9	5.6
24	127	510	224	130	570	180	169	61	7.4	24	6.0	6.5
25	138	480	191	110	510	257	148	117	9.5	20	6.9	5.2
26	138	390	202	80	480	292	127	158	9.5	16	9.0	4.9
27	127	390	180	60	360	420	127	88	11	18	6.9	5.2
28	117	420	130	55	257	640	117	70	28	14	6.9	5.6
29	96	390	100	48	-------	850	99	61	99	11	8.4	5.6
30	88	304	70	48	-------	1,120	92	51	58	9.5	8.4	4.9
31	86	-------	60	48	-------	1,560	-------	44	-------	22	6.5	-------

Note.—Discharge Dec. 28 to Jan. 6, Jan. 13-18, Jan. 23 to Feb. 21 and Mar. 1-5 estimated, because of ice, from weatner records, study of gage height graph and comparison with similar studies for Shenango River near Turnerville and at Sharon and Little Shenango River at Greenville.

Monthly discharge of Shenango River near Jamestown, for the year ending Sept. 30, 1922

(Drainage area 182 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	420	44	180	0.989	1.14
November	1,830	304	787	4.32	4.82
December	450	60	243	1.34	1.54
January	640	48	171	.940	1.08
February	570	55	235	1.29	1.34
March	1,560	100	504	2.77	3.19
April	1,560	92	420	2.31	2.58
May	158	32	68.6	.377	.43
June	99	7.4	28.4	.156	.17
July	84	9.5	38.6	.212	.24
August	330	6.0	76.2	.419	.48
September	38	4.9	9.10	.050	.06
The Year	1,830	4.9	229	1.26	17.07

OHIO BASIN—STATION NO. 33

LITTLE SHENANGO RIVER AT GREENVILLE

Location.—At single-span steel highway bridge, known as Quaker Bridge, Columbia Avenue, Greenville, Mercer County.

Drainage Area.—107 square miles.

Records Available.—January 1, 1914, to September 30, 1918, and November 7, 1919, to September 30, 1922.

Gage.—Staff attached to upstream corner of right abutment; read by James R. Marks. Elevation of gage zero 944.50 feet, United States Geological Survey datum.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of sand and gravel. Control for low stages is a coarse gravel and boulder bar, about 300 feet below gage, permanent; for high stages is a dam on the Shenango River just below the mouth of Little Shenango River.

Extremes of Discharge.—Maximum open-water stage during the year, 5.55 feet observed at 8.30 a. m. November 2 (discharge, 2,210 second-feet); a stage of 7.60 feet was observed at 8.30 a. m. February 13, but the water was held back by an ice jam; minimum, 0.98 foot at 4 p. m. September 26 (discharge, 3.1 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 1,800 second-feet and fairly well defined between 1,800 and 2,800 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Little Shenango River at Greenville, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
33	Dec. 20	C. B. McElrath	2.02	201
34	Aug. 8a	do	1.29	27.0

a Measurement made by wading 120 feet above gage.

Daily Mean Gage Height, in feet, of Little Shenango River at Greenville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.38	2.01	1.97	1.62	1.97	1.75	3.80	1.52	1.38	1.28	2.23	1.01
2	1.40	5.02	1.92	1.60	2.42	1.74	2.90	1.49	1.36	1.27	2.26	1.25
3	1.40	3.78	2.08	1.60	2.22	1.72	2.38	1.50	1.36	1.40	1.67	1.33
4	1.50	2.64	2.02	1.81	2.13	1.70	2.28	1.70	1.33	1.59	1.40	1.69
5	1.77	2.10	1.94	3.09	1.98	1.64	2.20	1.60	1.34	1.41	1.31	1.26
6	1.60	1.92	1.88	2.72	1.94	1.76	2.00	1.56	1.36	1.27	1.25	1.19
7	1.48	1.87	1.86	2.06	1.96	2.73	1.98	1.73	1.30	1.22	1.21	1.12
8	1.79	2.23	1.86	1.89	1.96	3.43	1.98	1.66	1.27	1.18	1.27	1.08
9	2.26	2.26	1.84	1.71	1.98	2.41	1.88	1.54	1.30	1.14	1.22	1.04
10	1.88	3.31	1.76	1.67	1.92	2.36	1.92	1.52	1.49	1.12	1.15	1.05
11	1.72	2.74	1.76	1.77	2.19	3.58	3.13	1.50	1.70	1.17	1.12	1.06
12	1.72	2.24	1.84	1.76	4.45	2.30	3.13	1.46	1.50	1.09	1.12	1.15
13	2.01	2.12	2.05	1.82	5.49	2.67	2.51	1.41	1.39	1.10	1.13	1.11
14	1.85	2.25	2.05	1.85	2.97	2.43	2.26	1.38	1.29	1.15	1.08	1.09
15	1.68	2.48	1.89	1.82	2.25	2.51	3.40	1.38	1.26	1.13	1.08	1.04
16	1.66	2.30	1.82	1.82	1.88	2.22	2.51	1.36	1.26	1.06	1.02	1.02
17	1.65	3.32	2.24	1.74	1.92	1.98	2.19	1.38	1.26	1.07	1.03	1.09
18	1.54	3.24	3.16	1.83	1.93	1.85	2.43	1.38	1.24	1.40	1.05	1.04
19	1.48	3.18	2.63	2.61	2.15	1.89	2.29	1.40	1.14	1.47	1.07	1.03
20	1.48	3.08	2.05	3.49	2.40	1.81	2.25	1.80	1.16	1.39	1.05	1.03
21	1.92	2.49	1.94	3.19	2.81	1.79	2.04	1.75	1.15	1.33	1.04	1.04
22	1.76	2.21	1.92	2.35	2.27	1.74	1.97	1.62	1.15	1.24	1.08	1.02
23	1.60	2.05	1.84	1.98	2.75	1.69	1.90	1.50	1.11	1.12	1.11	1.04
24	1.54	2.28	1.92	1.88	2.58	1.89	1.85	1.43	1.12	1.12	1.07	1.06
25	1.47	2.26	1.84	1.80	2.13	2.06	1.74	1.74	1.12	1.12	1.08	1.01
26	1.46	2.43	1.81	1.80	1.70	1.97	1.74	2.59	1.14	1.15	1.14	1.00
27	1.45	2.53	1.77	1.78	1.65	2.41	1.72	2.01	1.14	1.37	1.14	1.02
28	1.45	2.76	1.74	1.76	1.76	3.36	1.66	1.62	1.29	1.24	1.13	1.00
29	1.44	2.30	1.68	1.74	-------	2.57	1.57	1.49	1.58	1.17	1.03	1.01
30	1.39	2.06	1.63	1.74	-------	3.17	1.54	1.42	1.40	1.09	1.03	1.01
31	1.39	-------	1.62	1.85	-------	3.89	-------	1.39	-------	1.17	1.00	-------

Note.—Stage-discharge relation Dec. 27 to Jan. 4, Jan. 12 to Feb. 22 and Mar. 1-5 affected by ice.

Daily discharge, in second-feet, of Little Shenango River at Greenville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	158	150	36	30	80	788	60	39	27	228	3.7
2	42	1,780	138	36	100	65	484	56	37	25	228	23
3	42	960	171	42	90	55	262	57	37	42	85	33
4	57	374	158	55	75	55	244	90	33	71	42	88
5	104	184	143	580	75	65	212	73	34	44	30	24
6	73	138	128	394	65	102	158	67	37	25	23	16
7	54	126	124	184	65	416	153	96	29	19	18	8.1
8	108	244	124	128	65	788	153	83	25	15	25	5.8
9	228	228	119	92	65	279	128	63	29	10	19	4.4
10	128	681	102	85	75	279	138	60	56	8.1	11	4.7
11	94	416	102	104	100	788	605	57	90	14	8.1	5.0
12	94	228	119	80	180	681	605	51	57	6.2	8.1	11
13	168	184	171	65	320	335	316	44	41	6.7	8.9	7.4
14	122	228	171	65	220	279	262	39	28	11	5.8	6.2
15	87	316	131	55	130	316	734	39	24	8.9	5.8	4.4
16	83	244	115	55	100	212	316	37	24	5.0	3.9	3.9
17	82	681	228	55	90	153	212	39	24	5.4	4.2	6.2
18	63	656	605	55	75	122	298	39	22	42	4.7	4.4
19	54	630	374	110	75	117	244	51	10	52	5.4	4.2
20	54	580	171	180	90	112	228	110	12	41	4.7	4.2
21	138	316	143	170	130	108	171	100	11	33	4.4	4.4
22	102	212	138	130	180	98	150	76	11	22	4.2	3.9
23	73	171	119	110	416	88	133	57	7.4	8.1	7.4	4.4
24	63	244	138	90	354	131	122	46	8.1	8.1	5.4	5.0
25	52	228	119	65	198	171	98	98	8.1	8.1	5.8	3.7
26	51	298	112	50	90	150	98	354	10	11	10	3.5
27	50	335	80	42	82	279	94	158	10	38	10	3.9
28	50	416	55	36	102	707	83	76	28	22	8.9	3.5
29	48	244	50	30	-------	335	68	56	70	14	8.2	3.7
30	41	171	42	30	-------	605	63	45	42	6.2	4.2	3.7
31	41	-------	36	30	-------	1,020	-------	41	-------	14	3.5	-------

Note.—Discharge Dec. 27 to Jan. 4, Jan. 12 to Feb. 22 and Mar. 1-5 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River near Jamestown and at Sharon and Pymatuning Creek near Orangeville.

Monthly discharge of Little Shenango River at Greenville, for the year ending Sept. 30, 1922

(Drainage area 107 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	228	39	79.8	0.746	0.86
November	1,780	126	389	3.64	4.06
December	605	36	148	1.38	1.59
January	580	30	104	.972	1.12
February	416	30	130	1.21	1.26
March	1,020	55	290	2.71	3.12
April	788	63	254	2.37	2.64
May	354	37	74.8	.699	.81
June	90	7.4	29.8	.279	.31
July	71	5.0	21.4	.200	.23
August	228	3.5	27.0	.252	.29
September	88	3.5	10.2	.095	.11
The Year	1,780	3.5	129	1.21	16.40

OHIO BASIN—STATION NO. 34

PYMATUNING CREEK NEAR ORANGEVILLE

Location.—At single-span steel highway bridge, about two miles southeast of Orangeville, Mercer County.

Drainage Area.—170 square miles.

Records Available.—January 1, 1914, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by D. S. Stecher.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank is high and not subject to overflow; left begins to overflow at a stage of about 5.4 feet. Bed is composed of gravel and boulders. Low-water control is at a riffle about 30 feet below gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 6.80 feet observed at 6 p. m. April 1 (discharge, 2,270 second-feet); minimum, 0.57 foot at 7 a. m. September 4 (discharge, 2.4 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Regulation.—During low stages slight variations in gage height are caused by operation of mills.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 1,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except for low stages which are fair, owing to probable effect of mill operation above the station.

Discharge measurements of Pymatuning Creek near Orangeville, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
39	Dec. 21	O. B. McElrath	2.30	409
40	Aug. 8	H. L. Landis	1.16	56.4

Daily Mean Gage Height, in feet, of Pymatuning Creek near Orangeville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.44	3.30	2.15	1.24	1.62	1.83	6.46	1.42	0.86	1.40	1.18	0.69
2	1.35	4.53	1.94	1.20	1.82	1.60	5.35	1.30	.92	1.46	1.20	.62
3	1.35	6.24	2.04	1.22	1.72	1.43	4.29	1.50	.82	1.89	.98	.60
4	1.32	6.23	2.10	1.30	1.69	1.44	3.69	1.45	.80	1.74	.96	.58
5	1.36	4.82	2.14	2.01	1.71	1.60	3.28	1.40	.88	1.52	.84	.81
6	1.42	3.70	1.94	2.67	1.72	1.69	2.82	1.46	.81	1.36	1.20	.71
7	1.47	2.81	1.86	2.58	1.72	1.95	2.26	1.50	.88	1.25	1.28	.64
8	1.57	2.46	1.80	2.48	1.74	1.94	1.96	1.40	.82	.98	1.27	.83
9	1.68	2.12	1.78	2.33	1.70	2.02	1.78	1.42	.82	.90	1.20	.74
10	1.76	2.24	1.72	2.27	1.71	2.75	1.81	1.34	.84	.88	1.10	.60
11	1.81	2.38	1.56	2.21	2.45	4.43	3.01	1.42	.84	.82	.96	.80
12	1.95	2.50	1.57	2.02	2.92	4.80	3.05	1.22	.85	.79	.92	.92
13	1.75	2.41	1.65	1.86	3.00	4.72	3.28	1.24	.80	.78	.88	.95
14	1.64	2.56	1.75	1.69	2.82	3.95	3.89	.99	.81	.74	.88	.91
15	1.56	2.81	1.82	1.52	2.76	3.50	4.32	.97	.80	.73	.80	.82
16	1.50	2.89	1.82	1.52	2.68	3.12	3.61	1.08	.84	.70	.79	.88
17	1.46	4.14	2.16	1.48	2.34	2.95	4.04	1.02	.78	.70	.72	.75
18	1.42	4.42	2.78	1.36	1.88	2.94	3.55	1.22	.75	.95	.78	.70
19	1.35	5.85	2.70	1.31	1.55	2.89	2.91	1.11	.74	1.95	.70	.82
20	1.38	6.22	2.52	1.65	1.81	2.48	2.55	1.20	.82	1.78	.66	.66
21	1.38	5.22	2.28	2.01	1.99	2.10	2.17	1.10	.74	1.50	.64	.78
22	1.36	4.69	2.28	2.02	2.11	1.79	1.92	.96	.76	1.19	.72	.66
23	1.33	3.36	2.12	1.90	2.24	1.70	1.70	.90	.75	1.02	.71	.76
24	1.30	2.82	1.88	1.73	2.28	1.72	1.67	.93	.84	1.01	.61	.60
25	1.31	2.42	1.88	1.46	2.58	1.74	1.75	1.23	.78	1.14	.70	.68
26	1.29	2.26	1.86	1.30	2.52	1.80	1.52	1.36	.76	.93	.74	.59
27	1.27	2.28	1.84	1.14	2.27	2.33	1.62	1.09	.78	1.06	.65	.60
28	1.24	2.27	1.78	1.04	2.08	2.88	1.37	.98	.80	1.08	.68	.59
29	1.20	2.26	1.66	.92	-------	2.89	1.62	.90	1.00	1.02	.59	.60
30	1.10	2.22	1.45	.93	-------	4.27	1.33	.94	1.03	.88	.62	.70
31	1.10	-------	1.37	1.13	-------	5.31	-------	.85	-------	1.06	.60	-------

Note.—Stage-discharge relation Dec. 25 to Jan. 4, Jan. 8-19, Feb. 4-12, 14-21 and Feb. 28 to Mar. 5 affected by ice.

Daily discharge, in second-feet, of Pymatuning Creek near Orangeville, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	595	281	46	153	130	2,050	112	20	108	68	6.9
2	99	987	228	46	199	100	1,370	89	27	120	71	4.0
3	99	1,840	253	55	176	90	914	128	15	216	35	3.3
4	93	1,840	268	70	150	90	717	118	13	180	32	2.7
5	100	1,100	278	245	120	100	595	108	22	132	17	14
6	112	717	228	412	100	169	453	120	14	100	71	7.8
7	122	453	208	399	90	230	310	128	22	80	85	4.7
8	143	359	194	340	90	228	233	108	15	35	84	16
9	167	273	189	280	100	248	189	112	15	24	87	9.4
10	185	304	176	220	120	440	196	97	17	22	54	3.3
11	196	341	141	170	170	950	509	112	17	15	32	13
12	230	372	143	130	340	1,100	523	75	19	12	27	27
13	183	346	160	110	509	1,060	595	78	23	12	22	31
14	158	336	183	90	360	813	781	37	14	94	22	25
15	141	453	199	80	220	655	914	34	13	8.8	13	15
16	128	481	199	70	170	537	686	51	17	7.3	12	22
17	120	846	284	70	150	495	813	41	12	7.3	8.3	10
18	112	950	453	60	120	495	686	75	10	31	12	7.3
19	99	1,590	426	70	110	481	481	56	9.4	230	7.3	15
20	104	1,840	372	160	120	372	386	71	15	189	5.6	5.6
21	104	1,280	315	245	200	268	286	54	9.4	128	4.7	12
22	100	1,060	315	248	271	192	223	32	10	69	8.3	5.6
23	95	625	273	218	304	171	171	24	10	41	7.8	10
24	89	453	213	178	315	176	164	28	17	40	3.6	3.3
25	91	346	180	120	399	180	183	76	12	61	7.3	6.4
26	87	310	160	89	372	194	132	100	10	28	9.4	3.0
27	84	315	130	61	312	328	153	52	12	51	5.2	3.3
28	78	312	110	44	220	481	102	35	13	51	6.4	3.0
29	71	310	90	27	-------	481	153	24	38	41	3.0	3.3
30	54	299	60	28	-------	914	95	30	43	22	4.0	7.3
31	54	-------	55	59	-------	1,320	-------	19	-------	48	6.9	-------

Note.—Discharge Dec. 25 to Jan. 4, Jan. 8-19, Feb. 4-12, 14-21 and Feb. 28 to Mar. 5 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River near Jamestown and at Sharon and Little Shenango River at Greenville.

Monthly discharge of Pymatuning Creek near Orangeville, for the year ending Sept. 30, 1922

(Drainage area 170 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	230	54	117	0.688	0.79
November	1,840	273	713	4.19	4.68
December	453	55	218	1.28	1.48
January	412	27	143	.841	.97
February	509	90	213	1.25	1.30
March	1,320	90	435	2.56	2.95
April	2,050	95	502	2.95	3.29
May	128	19	71.7	.422	.49
June	43	9.4	16.8	.099	.11
July	230	7.3	68.3	.402	.46
August	87	3.0	26.8	.158	.18
September	31	2.7	10.0	.059	.07
The Year	2,050	2.7	210	1.24	16.77

OHIO BASIN—STATION NO. 35

SHENANGO RIVER AT SHARON

Location.—At single-span steel highway bridge, Chestnut Street, Sharon, Mercer County.

Drainage Area.—611 square miles.

Records Available.—August 1, 1909, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Carnegie Steel Company. Elevation of gage zero 840.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from the Mill, Chestnut or State street bridges, or by wading.

Channel and Control.—Banks begin to overflow at a stage of about 12 feet. Bed is composed of silt and gravel. Control is a water main, backed with gravel and boulders, about one-quarter of a mile below the gage; probably permanent.

Extremes of Discharge.—Maximum stage during the year, 8.8 feet observed at 8 a. m. November 3 and April 1 (discharge, 4,690 second-feet); minimum, 1.9 feet at 5 p. m. June 22 and on June 25, August 28 and 29, at 5 p. m. August 31, 8 a. m. September 1, and from September 26 to 30 (discharge, 29 second-feet).

Ice.—Water from this river is used for industrial purposes and returned to the stream at sufficiently high temperature to usually prevent the formation of ice for a considerable distance below the station.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined below 2,000 second-feet; fairly well defined between 2,000 and 5,000 second-feet and well defined between 5,000 and 9,000 second-feet. Gage read to tenths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good except those for extremely low stages which are fair.

Cooperation.—Station is maintained in cooperation with Carnegie Steel Company, Farrell.

Discharge measurements of Shenango River at Sharon, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
109	Oct. 15a	R. J. Ferris	3.79	648
110	Dec. 27a	C. B. McElrath	3.73	603
111	Aug. 7a	do	3.23	398

a Measurement made at Mill Street Bridge.

Daily Mean Gage Height, in feet, of Shenango River at Sharon, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.4	4.0	4.45	3.1	-------	3.5	8.65	2.9	2.55	2.75	2.2	1.95
2	2.45	7.9	4.25	3.0	-------	3.4	7.85	2.9	2.4	2.65	3.4	2.0
3	2.45	8.65	4.45	3.05	-------	3.25	6.35	2.85	2.4	2.9	3.2	2.0
4	2.55	8.15	4.55	3.4	-------	3.4	5.75	3.1	2.3	3.05	2.95	2.0
5	2.65	7.15	4.2	5.5	3.3	3.3	5.25	3.2	2.2	2.8	3.2	2.05
6	2.75	5.9	4.05	5.35	3.35	3.5	4.7	3.1	2.2	2.6	3.3	2.3
7	2.9	5.0	3.9	4.6	3.45	-------	4.35	3.15	2.2	2.45	3.2	2.15
8	3.05	4.65	3.85	4.55	3.3	-------	4.15	3.3	2.2	2.35	3.1	2.0
9	4.1	4.3	3.6	4.65	3.3	5.75	3.95	3.1	2.2	2.3	2.85	2.0
10	4.0	4.45	3.6	4.05	3.35	5.55	3.9	2.95	2.2	2.25	2.65	2.0
11	3.7	4.85	3.6	3.4	3.7	7.05	5.3	2.85	2.3	2.2	2.55	2.05
12	3.75	5.0	3.8	3.3	5.4	7.7	6.25	2.8	2.65	2.1	2.45	2.0
13	3.95	5.1	4.25	3.2	5.35	-------	5.6	2.7	2.45	2.1	2.3	2.05
14	4.05	5.05	4.15	3.2	4.5	-------	5.7	2.6	2.3	2.1	2.2	2.1
15	3.85	5.3	3.9	3.3	4.15	6.3	7.2	2.55	2.3	2.1	2.2	2.1
16	3.65	5.35	3.9	3.15	3.9	5.5	6.4	2.5	2.2	2.1	2.2	2.1
17	3.5	6.8	4.3	3.05	3.55	4.95	5.65	2.5	2.2	2.35	2.15	2.05
18	3.35	7.35	5.7	2.95	3.35	4.55	6.65	2.5	2.1	2.5	2.1	2.1
19	3.19	8.15	5.2	3.5	3.35	4.15	5.55	2.55	2.1	2.7	2.15	2.1
20	3.15	8.5	4.45	4.35	4.1	4.0	5.0	2.85	2.1	2.65	2.1	2.1
21	3.3	7.65	4.15	4.15	4.2	3.85	4.6	3.1	2.1	2.55	2.0	2.1
22	3.4	6.3	3.9	3.85	4.15	3.6	4.15	3.0	1.95	2.5	2.0	2.0
23	3.2	5.45	3.85	3.7	5.2	3.55	3.85	2.75	2.0	2.45	2.0	2.0
24	3.0	5.3	4.05	3.45	5.4	3.6	3.6	2.45	2.0	2.4	2.0	2.0
25	3.0	5.2	3.9	-------	4.9	4.1	3.45	2.4	1.9	2.25	2.0	2.0
26	2.95	4.9	3.6	-------	4.65	4.1	3.4	3.5	2.0	2.25	2.0	1.9
27	2.85	4.9	3.85	-------	4.45	4.85	3.4	3.8	2.0	2.15	2.0	1.9
28	2.8	4.85	3.3	-------	4.15	6.35	3.25	3.25	2.0	2.2	1.9	1.9
29	2.8	4.8	3.11	-------	-------	6.45	3.1	2.9	2.3	2.2	1.9	1.9
30	2.7	4.65	3.3	-------	-------	6.8	3.0	2.7	2.85	2.1	2.0	1.9
31	2.7	-------	3.1	-------	-------	8.1	-------	2.6	-------	2.1	1.95	-------

Note.—Stage-discharge relation Dec. 30 to Jan. 4, Jan. 15-17, Jan. 25 to Feb. 4 and Mar. 2-5 affected by ice. Gage heights not observed on days of no record.

Daily discharge, in second-feet, of Shenango River at Sharon, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	114	755	980	170	320	495	4,450	243	149	200	75	36
2	126	3,680	865	190	480	380	3,580	243	114	174	447	42
3	126	4,450	980	220	500	340	2,320	228	114	243	355	42
4	149	4,010	1,100	300	500	340	1,870	314	93	296	260	42
5	174	3,000	865	1,660	400	360	1,460	355	75	213	355	50
6	200	1,940	755	1,590	424	495	1,160	314	75	161	400	93
7	243	1,340	700	1,100	471	1,500	980	334	75	126	355	66
8	296	1,100	672	1,100	400	2,800	865	400	75	104	314	42
9	810	920	545	1,100	400	1,870	728	314	75	93	228	42
10	755	980	545	755	424	1,730	700	260	75	84	174	42
11	595	1,220	545	447	595	2,820	1,520	228	93	75	149	50
12	620	1,340	645	400	1,590	3,480	2,160	213	174	58	126	42
13	728	1,400	865	355	1,590	3,000	1,730	186	126	58	93	50
14	755	1,340	865	355	1,040	2,800	1,800	161	93	58	75	58
15	672	1,520	700	300	865	2,240	3,000	149	93	58	75	58
16	570	1,590	700	280	700	1,660	2,320	137	75	58	75	58
17	495	2,640	920	260	520	1,340	1,730	137	75	104	66	50
18	424	3,180	1,800	260	424	1,100	2,480	137	58	137	58	58
19	355	4,010	1,460	495	424	865	1,730	149	58	186	66	58
20	334	4,340	980	980	810	755	1,340	228	58	174	58	58
21	400	3,380	865	865	865	672	1,100	314	58	149	42	58
22	447	2,240	700	672	865	545	865	277	36	137	42	42
23	355	1,590	672	595	1,460	520	672	200	42	126	42	42
24	277	1,520	755	471	1,590	545	545	126	42	114	42	42
25	277	1,460	700	400	1,280	810	471	114	29	84	42	42
26	260	1,280	545	300	1,100	810	447	495	42	84	42	29
27	228	1,280	672	220	980	1,220	447	645	42	66	42	29
28	213	1,220	400	190	865	2,320	378	378	42	75	29	29
29	213	1,220	314	160	-------	2,320	314	243	93	75	29	29
30	186	1,100	260	150	-------	2,640	277	186	228	58	42	29
31	186	-------	200	150	-------	3,900	-------	161	-------	58	36	-------

Note.—Discharge Dec. 30 to Jan. 4, Jan. 15-17, Jan. 25 to Feb. 4 and Mar. 2-5 estimated, because of ice, and Mar. 7, 8, 13 and 14, because of no gage height record, from weather records, study of gage height graph and comparison with similar studies for Shenango River near Jamestown and at New Castle, Little Shenango River at Greenville and Pymatuning Creek near Orangeville.

Monthly discharge of Shenango River at Sharon, for the year ending Sept. 30, 1922

(Drainage area 611 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	810	114	374	0.612	0.71
November	4,450	755	2,030	3.32	3.71
December	1,800	200	760	1.24	1.43
January	1,660	150	532	.871	1.00
February	1,590	320	782	1.28	1.33
March	3,900	340	1,510	2.47	2.85
April	4,450	277	1,450	2.37	2.64
May	645	114	254	.416	.48
June	228	29	82.6	.135	.15
July	296	58	119	.195	.22
August	447	29	137	.224	.26
September	93	29	46.9	.077	.09
The Year	4,450	29	609	1.09	14.87

OHIO BASIN--STATION NO. 36

SHENANGO RIVER AT NEW CASTLE

Location.—At two-span steel highway bridge, West Washington Street, New Castle, Lawrence County.

Drainage Area.—797 square miles.

Records Available.—January 1, 1910, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by J. L. Moseley. Elevation of gage zero 787.00 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of gravel and rock. Control is at a riffle, at the head of a low island, about 300 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 6.87 feet observed at 4.50 p. m. April 1 (discharge, 5,660 second-feet); minimum, 0.70 foot at 4 p. m. September 25 (discharge, 18 second-feet).

Ice.—Stage-discharge relation seldom affected by ice.

Diversions.—Water supply for the City of New Castle is taken from the river about one and one half miles above the gage.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Discharge measurements of Shenango River at New Castle, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
39	June 14	C. B. McElrath	1.49	214
40	Aug. 7a	H. L. Landis	2.05	396

a Measurement made from downstream side of bridge.

Daily Mean Gage Height, in feet, of Shenango River at New Castle, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.41	1.98	3.12	2.10	1.35	2.62	6.77	1.82	1.52	1.67	0.99	1.14
2	1.25	5.38	3.05	1.99	1.68	2.39	6.50	1.76	1.35	1.60	1.17	1.49
3	1.36	6.30	3.10	2.05	2.48	2.19	5.25	1.75	1.25	1.75	1.96	1.28
4	1.26	6.24	3.45	2.21	2.49	2.09	4.22	1.88	1.19	1.90	1.88	1.14
5	1.32	5.27	3.21	3.54	2.15	2.17	4.04	2.08	1.39	1.75	1.85	1.16
6	1.65	4.24	2.82	4.18	2.12	2.39	3.57	2.11	1.21	1.65	2.04	1.11
7	1.88	3.59	2.65	3.30	2.21	3.99	3.12	2.11	1.26	1.53	2.02	1.29
8	1.88	3.15	2.55	3.05	2.18	5.57	2.96	2.04	1.25	1.34	2.28	1.10
9	2.25	2.90	2.52	3.20	2.05	4.59	2.89	2.01	1.26	1.33	1.94	1.12
10	2.77	2.80	2.48	3.08	1.97	3.99	2.70	1.85	1.57	1.25	1.71	1.08
11	2.49	2.97	2.40	2.78	2.20	5.04	3.43	-------	1.77	1.24	1.54	.98
12	2.35	3.50	2.48	2.31	3.76	6.25	4.80	-------	1.99	1.20	1.49	.98
13	2.49	3.62	2.85	2.18	4.46	5.64	4.30	-------	1.62	1.25	1.34	1.05
14	2.60	3.53	2.92	2.15	3.49	5.59	4.48	-------	1.43	1.19	1.18	1.00
15	2.50	3.72	2.75	2.30	2.97	5.15	6.02	-------	1.38	1.17	1.21	1.01
16	2.40	3.83	2.60	2.15	2.69	4.29	5.67	-------	1.39	1.14	1.15	.87
17	2.30	4.68	2.70	2.02	2.55	3.61	4.45	1.45	1.15	1.04	1.07	1.10
18	2.21	5.67	3.81	1.85	2.35	3.22	5.29	1.39	1.26	1.29	1.10	.84
19	2.08	5.91	3.82	2.06	2.22	2.97	4.78	1.45	1.22	1.99	1.20	1.03
20	2.00	6.22	3.41	3.00	2.72	2.77	3.78	1.66	1.26	1.82	1.22	.95
21	1.94	6.06	3.09	3.04	3.17	2.69	3.39	1.87	1.11	1.65	.98	.99
22	2.05	5.13	2.88	2.98	2.98	2.52	3.02	1.97	1.02	1.52	1.33	.96
23	2.10	4.08	2.58	2.48	3.73	2.38	2.87	1.85	1.12	1.36	1.06	1.13
24	1.86	3.70	2.82	2.25	4.23	2.37	2.52	1.62	1.04	1.43	.92	1.14
25	1.85	3.90	2.85	2.12	3.40	2.68	2.35	1.41	1.16	1.19	1.11	.72
26	1.70	3.79	2.79	2.20	3.22	2.77	2.23	1.67	.95	1.14	1.07	.76
27	1.76	3.79	2.56	1.98	3.17	3.14	2.17	2.75	1.00	1.24	1.12	.84
28	1.69	4.31	2.42	1.78	3.07	4.85	2.07	2.57	1.29	1.15	.91	.86
29	1.66	3.95	2.32	1.90	-------	4.95	1.99	1.93	1.19	1.16	1.07	.74
30	1.62	3.49	2.20	1.70	-------	4.81	1.97	1.77	1.08	1.12	1.04	.74
31	1.60	-------	2.00	1.60	-------	6.03	-------	1.65	-------	.98	.95	-------

Note.—Stage discharge relation Dec. 28 to Jan. 4, Jan. 15-18 and Jan. 26 to Feb. 2 affected by ice. Gage height not observed on days of no record.

Daily discharge, in second-feet, of Shenango River at New Castle, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	136	380	1,120	240	300	760	5,500	305	178	239	37	59
2	84	3,470	1,040	260	500	625	5,180	278	115	210	64	166
3	118	4,710	1,120	300	690	500	3,210	274	84	274	371	92
4	87	4,560	1,360	400	690	443	2,090	333	68	342	333	59
5	105	3,340	1,200	1,440	472	472	1,890	443	129	274	319	62
6	231	2,090	900	2,090	443	625	1,530	443	73	231	416	53
7	333	1,530	795	1,280	500	1,890	1,120	443	87	182	390	95
8	333	1,200	725	1,040	500	3,730	1,000	416	84	112	560	51
9	530	970	690	1,200	416	2,510	970	390	87	108	361	55
10	865	900	690	1,120	376	1,890	830	319	198	84	256	48
11	690	1,000	625	900	500	2,970	1,360	300	283	81	186	31
12	592	1,440	690	560	1,710	4,560	2,730	260	385	70	166	36
13	690	1,530	935	500	2,400	3,730	2,190	240	218	84	112	44
14	760	1,440	970	472	1,440	3,730	2,400	200	143	66	66	38
15	690	1,620	865	420	1,000	3,210	4,280	190	125	64	73	39
16	625	1,710	760	360	830	2,190	3,860	170	129	59	60	26
17	560	2,620	830	340	725	1,530	2,290	151	60	43	47	51
18	500	3,860	1,710	320	592	1,200	3,340	129	87	95	51	24
19	443	4,140	1,710	416	500	1,000	2,730	151	76	385	70	42
20	390	4,560	1,360	1,040	830	865	1,710	235	87	305	76	33
21	361	4,420	1,120	1,040	1,200	830	1,360	328	53	231	36	37
22	416	3,090	970	1,040	1,040	690	1,040	376	41	178	108	34
23	443	1,990	760	690	1,620	625	935	319	55	118	46	57
24	324	1,620	900	530	2,090	592	690	218	43	143	30	59
25	319	1,800	935	443	1,360	830	592	136	62	68	53	19
26	252	1,710	900	400	1,200	865	530	239	33	59	47	20
27	278	1,710	725	300	1,200	1,120	472	865	38	81	55	24
28	248	2,190	550	260	1,120	2,730	416	725	95	60	29	26
29	235	1,890	420	200	-------	2,970	385	356	68	62	47	20
30	218	1,440	340	190	-------	2,730	376	283	48	55	43	20
31	210	-------	260	190	-------	4,280	-------	231	-------	36	33	-------

Note.—Discharge does not include the water diverted from the stream at the New Castle Water Works. Discharge Dec. 28 to Jan. 4, Jan. 15-18 and Jan. 26 to Feb. 2 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Jamestown and Sharon. Discharge May 11-16 estimated, because of no gage height record, from gage height graph and discharge at stations in adjacent drainage areas.

Monthly discharge of Shenango River at New Castle, for the year ending Sept. 30, 1922

(Drainage area 797 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	865	84	389	0.496	0.57
November	4,710	330	2,300	2.89	3.23
December	1,710	260	902	1.14	1.31
January	2,090	190	645	.817	.94
February	2,400	300	937	1.18	1.23
March	4,560	443	1,830	2.30	2.65
April	5,500	376	1,900	2.40	2.68
May	865	129	314	.400	.46
June	385	33	108	.142	.16
July	385	36	142	.186	.21
August	560	29	147	.191	.22
September	166	19	47.3	.067	.07
The Year	5,500	19	801	1.01	13.78

Note.—Discharge does not include the water diverted from the stream at the New Castle Water Works. Run-off includes the quantity of water diverted.

OHIO BASIN—STATION NO. 37

NESHANNOCK CREEK AT EASTBROOK STATION

Location.—At single-span wooden highway bridge, Pennsylvania Railroad station, Eastbrook, Lawrence County.

Drainage Area.—235 square miles.

Records Available.—January 19, 1914, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by J. L. Garner. Elevation of gage zero 877.53 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of gravel and rock. Control is at a riffle about 500 feet below gage; practically permanent.

Extremes of Discharge.—Maximum stage during the year, 4.44 feet observed at 5 p. m. April 14 and 8.15 a. m. April 15 (discharge, 2,480 second-feet); minimum, 0.70 foot at 4 p. m. August 23 (discharge, 15 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined between 50 and 2,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Neshannock Creek at Eastbrook Station, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
22	Dec. 28	C. B. BeElrath	1.73	217
23	Apr. 22	do	2.06	349
24	22	do	2.03	352
25	Aug. 5	do	1.14	48.7
26	19a	do	1.05	41.5
27	19	do	1.05	36.3

a Measurement made by surface method.

Daily Mean Gage Height, in feet, of Neshannock Creek at Eastbrook Station, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.59	2.21	2.19	1.56	1.80	1.94	3.66	1.45	1.14	1.13	1.00	1.11
2	1.68	-------	2.02	1.56	1.76	1.83	2.48	1.53	1.14	1.14	1.11	1.11
3	1.75	-------	1.97	1.61	1.80	1.60	2.42	1.60	1.14	1.15	1.08	.95
4	1.84	-------	1.94	1.73	1.91	1.44	2.44	1.65	1.22	1.19	1.10	.95
5	1.65	-------	1.94	1.99	1.88	1.46	2.37	1.63	1.24	1.15	1.04	.92
6	1.42	-------	1.82	2.02	1.84	1.51	2.43	1.72	1.22	1.14	.97	.93
7	1.38	-------	1.79	1.99	1.77	3.29	2.59	1.99	1.32	1.10	1.00	.91
8	1.49	-------	1.86	1.85	1.72	3.23	2.67	2.08	1.39	.93	1.21	.92
9	1.61	-------	1.85	1.81	1.79	2.54	2.54	1.61	1.51	.93	1.07	.93
10	1.72	-------	1.74	1.74	1.84	2.46	2.44	1.39	1.59	.88	.99	.92
11	1.67	-------	1.66	1.70	2.01	2.52	2.70	1.36	1.67	.89	.95	.91
12	1.40	-------	1.63	1.77	2.45	2.90	3.30	1.35	1.54	.89	.96	.92
13	1.30	-------	1.71	1.84	3.08	-------	4.09	1.48	1.33	1.07	1.01	.91
14	1.27	-------	1.79	2.01	2.95	-------	4.39	1.56	1.19	.97	.99	.92
15	1.34	-------	1.89	1.47	2.65	-------	3.77	1.63	1.14	.96	.90	.95
16	1.33	-------	1.87	1.48	2.21	-------	2.38	1.66	1.19	.89	1.05	.88
17	1.33	3.20	2.28	1.46	1.88	2.08	2.49	1.79	.98	.84	1.04	.77
18	1.37	3.16	3.06	1.71	1.84	1.82	2.23	1.90	1.14	1.17	.97	.82
19	1.50	3.11	2.68	1.96	1.79	1.91	2.19	1.77	1.13	2.01	.96	.73
20	1.46	2.97	2.13	1.92	1.78	1.87	2.14	1.65	1.13	1.62	.96	.75
21	-------	2.71	2.08	1.78	1.91	1.89	2.60	1.59	.97	1.12	.90	.75
22	-------	2.48	1.98	1.78	2.50	1.94	2.12	1.51	1.04	.88	.88	.83
23	-------	2.30	1.88	1.70	2.76	2.05	2.04	1.48	.97	.92	.78	.76
24	-------	2.52	1.75	1.61	2.84	1.90	1.86	1.44	.93	1.14	.78	.81
25	1.31	2.86	1.75	1.61	2.67	1.86	1.58	1.35	.95	1.13	.78	.81
26	1.30	2.96	1.71	1.78	2.60	1.97	1.65	1.44	1.00	.90	.91	.85
27	1.27	3.12	2.08	1.80	2.00	2.50	1.72	1.48	1.15	.89	.91	.79
28	1.22	3.56	1.72	1.96	2.00	3.05	1.72	1.48	1.18	.88	.88	.79
29	1.17	2.69	1.69	1.88	-------	3.42	1.58	1.24	1.14	.92	.87	.81
30	1.25	2.38	1.59	1.89	-------	3.65	1.65	1.25	1.14	.89	.87	.83
31	1.32	-------	1.51	1.77	-------	3.95	-------	1.19	-------	.92	.97	-------

Note.—Gage height Oct. 21-24 and Nov. 2-16 unsatisfactory and Mar. 13-16 not observed. Stage-discharge relation Jan. 12-16, 23-31, Feb. 14-21 and Feb. 26 to Mar. 3 affected by ice.

Daily discharge, in second-feet, of Neshannock Creek at Eastbrook Station, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	140	365	365	126	207	160	1,660	101	51	51	35	45
2	172	1,800	280	126	190	130	530	126	51	51	45	45
3	190	900	261	140	207	110	470	140	51	51	45	31
4	224	600	261	190	242	101	500	156	57	57	45	31
5	156	340	261	280	242	101	442	156	64	51	40	29
6	89	260	207	280	224	113	500	172	57	51	33	29
7	89	260	207	280	190	1,250	690	280	71	45	35	28
8	113	240	224	224	172	1,200	640	320	89	29	57	29
9	140	260	224	207	207	565	565	140	113	29	40	29
10	172	300	190	190	224	500	500	89	140	26	34	29
11	156	440	156	172	280	530	680	80	156	26	31	28
12	89	400	156	170	500	850	1,250	80	126	26	32	29
13	71	340	172	140	1,050	700	2,120	113	80	40	35	28
14	64	300	207	110	700	1,000	2,480	126	57	33	34	29
15	80	550	242	100	420	700	1,770	156	51	32	32	31
16	80	500	224	90	240	480	470	156	57	26	40	26
17	80	1,150	415	101	170	320	530	207	33	23	40	19
18	80	1,100	1,000	172	140	207	390	242	51	51	33	21
19	113	1,050	680	261	130	242	365	190	51	280	32	17
20	101	900	342	242	160	224	342	156	51	140	32	17
21	200	680	320	207	220	242	600	140	33	45	27	17
22	170	530	280	207	530	261	320	113	40	26	26	22
23	130	415	242	160	720	300	300	113	33	29	19	18
24	90	530	190	130	805	242	224	101	29	51	19	21
25	71	805	190	110	640	224	140	80	31	51	19	21
26	71	900	172	110	360	261	156	101	35	27	28	24
27	64	1,050	320	110	240	530	172	113	51	26	28	19
28	57	1,550	172	110	200	1,000	172	113	57	26	26	19
29	51	680	172	130	-------	1,350	140	64	51	29	26	21
30	64	470	140	140	-------	1,550	156	64	51	26	25	22
31	71	-------	113	170	-------	2,000	-------	57	-------	29	33	-------

Note.—Discharge estimated Oct. 21-24 and Nov. 2-16, because of unsatisfactory gage height record, and Mar. 13-16, because of no gage height record, from comparison of weather record and gage height graph with Little Shenango River at Greenville and Slippery Rock Creek at Wurtemburg. Discharge Jan. 12-16, 23-31, Feb. 14-21, and Feb. 26 to Mar. 3 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Slippery Rock Creek at Wurtemburg, Connoquenessing Creek at Hazen, Shenango River at Sharon and Little Shenango River at Greenville.

Monthly discharge of Neshannock Creek at Eastbrook Station, for the year ending Sept. 30, 1922

(Drainage area 235 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	224	51	111	0.472	0.54
November	1,800	240	656	2.79	3.11
December	1,000	113	270	1.15	1.33
January	280	90	167	.711	.82
February	1,050	130	343	1.46	1.52
March	2,000	101	563	2.40	2.77
April	2,480	140	639	2.72	3.04
May	320	57	137	.583	.67
June	156	29	62.3	.265	.30
July	280	23	47.8	.203	.23
August	57	19	33.1	.141	.16
September	45	17	25.8	.110	.12
The Year	2,480	17	253	1.08	14.61

OHIO BASIN—STATION NO. 38

CONNOQUENESSING CREEK NEAR HAZEN

Location.—At single-span steel highway bridge, about one-half mile south of Baltimore & Ohio Railroad station at Hazen, Beaver County.

Drainage Area.—355 square miles.

Records Available.—June 3, 1915, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Ezra Hazen.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Right bank begins to overflow at a stage of about 10 feet; left is high and not subject to overflow. Bed is composed of gravel and boulders. Control is a deposit of gravel on ledge about 250 feet below gage; permanent.

Extremes of Discharge.—Maximum stage during the year, 9.65 feet observed at 4 p. m. March 7 (discharge, 6,500 second-feet); minimum, 1.14 feet on September 22, 5 p. m. September 24, 4 p. m. September 25, 7 a. m. September 26, 8 a. m. September 27 and 28 and on September 30 (discharge, 11 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve well defined to 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results good.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Discharge measurements of Connoquenessing Creek near Hazen, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
21	Dec. 28	C. B. McElrath	2.77	615
22	Mar. 17	do	3.19	890
23	Aug. 5	H. L. Landis	1.60	69.0

Daily Mean Gage Height, in feet, of Connoquenessing Creek near Hazen, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.89	------	------	3.05	2.72	2.36	6.81	2.02	1.76	1.40	1.46	1.30
2	1.80	------	------	3.71	2.68	2.28	5.35	1.98	1.76	1.87	1.59	1.95
3	1.76	------	------	4.45	2.74	2.26	4.00	1.95	1.74	------	1.87	1.71
4	1.74	------	------	4.25	2.77	2.22	3.60	2.11	1.73	------	1.84	1.40
5	1.82	3.13	2.93	4.27	2.76	2.79	3.32	2.52	1.71	------	1.78	1.32
6	1.78	2.82	2.87	3.49	2.74	3.46	2.90	------	1.76	------	1.60	1.26
7	1.71	2.55	2.86	2.84	2.74	7.27	2.78	2.38	1.90	------	1.53	1.23
8	1.85	2.29	2.79	2.84	2.74	6.32	2.75	2.24	2.11	1.26	------	1.20
9	1.86	2.21	2.73	2.85	2.63	5.29	2.66	2.12	1.99	1.25	------	1.19
10	1.81	2.19	2.70	2.94	2.67	4.37	2.52	2.01	2.00	1.25	------	1.19
11	1.78	2.28	2.70	2.99	2.79	4.13	2.50	1.99	2.11	1.26	------	1.42
12	1.74	------	2.70	3.22	3.46	4.40	2.23	1.94	------	1.27	------	1.47
13	1.70	------	2.71	3.58	3.21	4.03	2.53	1.88	2.13	1.25	1.30	1.42
14	1.64	3.24	2.70	3.88	2.94	4.46	3.74	1.84	1.94	1.24	1.30	1.38
15	1.61	3.62	2.74	3.81	2.86	4.03	8.70	1.83	1.80	1.26	1.30	1.31
16	1.60	3.24	2.79	3.46	2.80	3.65	5.86	1.93	1.71	1.24	1.34	1.26
17	1.60	4.77	2.96	3.14	2.83	3.25	4.55	2.22	1.76	1.26	1.34	1.24
18	1.60	4.64	4.80	2.88	2.88	2.93	3.53	2.14	1.80	1.70	1.30	1.19
19	1.60	4.18	5.96	2.66	3.04	2.80	3.26	2.05	1.70	1.83	1.29	1.18
20	1.98	4.26	------	2.55	3.21	2.78	3.08	------	1.62	1.78	1.33	1.17
21	2,34	3.19	------	2.52	3.26	2.63	2.88	------	1.56	1.60	1.32	1.16
22	------	2.96	------	2.54	3.55	2.50	2.78	------	1.52	1.46	1.32	1.14
23	------	3.10	------	2.56	3.00	2.34	2.58	2.16	1.47	1.38	1.32	1.16
24	------	3.34	------	2.64	2.60	2.57	2.44	2.14	1.42	1.42	1.38	1.15
25	------	3.82	------	2.64	2.51	2.50	2.38	2.30	1.40	1.36	1.58	1.14
26	------	4.33	3.44	2.66	2.50	2.49	2.34	2.22	1.40	1.31	1.69	1.15
27	------	5.98	3.19	2.66	2.44	2.81	2.27	2.07	1.39	1.32	1.68	1.14
28	------	7.43	2.86	2.60	2.39	4.73	2.18	1.99	1.42	1.29	1.59	1.16
29	------	6.54	2.74	2.66	------	4.70	2.12	1.90	1.42	1.32	1.46	1.16
30	1.60	5.09	2.64	2.66	------	4.47	2.08	1.82	1.40	1.36	1.39	1.14
31	1.71	------	2.52	2.69	------	4.63	------	1.78	------	1.44	1.35	------

Note.—Gage height Oct. 25-29 not observed; on other days of no record, unsatisfactory. Stage-discharge relation Jan. 1-4, Jan. 8 to Feb. 11 and Feb. 14-21 affected by ice.

Daily discharge, in second-feet, of Connoquenessing Creek near Hazen, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	143	1,400	1,600	380	380	350	3,920	193	100	28	36	24
2	112	2,200	1,100	340	600	310	2,660	177	100	136	58	166
3	100	1,700	1,100	340	700	301	1,500	166	95	550	136	86
4	95	1,200	850	750	500	282	1,180	232	92	240	126	36
5	119	840	702	1,660	340	605	950	425	86	100	106	21
6	106	605	637	1,100	280	1,060	670	550	100	42	60	17
7	86	455	637	637	260	4,370	605	360	146	26	47	15
8	129	315	605	460	220	3,920	575	291	232	17	140	13
9	132	277	575	380	220	2,570	515	236	181	16	110	13
10	115	268	545	320	260	1,820	425	189	185	16	60	13
11	106	310	545	290	300	1,580	425	181	232	17	40	31
12	95	480	545	220	1,060	1,820	286	162	500	17	24	38
13	83	550	545	220	875	1,500	455	139	240	16	19	31
14	69	912	545	220	550	1,900	1,260	126	162	15	19	26
15	62	1,180	575	220	400	1,500	5,630	122	112	17	19	20
16	60	912	605	220	300	1,180	3,110	158	86	15	23	17
17	60	2,140	702	220	220	912	1,980	282	100	17	23	15
18	60	1,980	2,140	260	220	702	1,100	245	112	83	19	13
19	60	1,660	3,200	480	380	605	912	206	83	122	18	12
20	177	1,740	1,700	1,300	600	605	805	650	65	106	22	12
21	340	875	750	1,000	900	515	670	600	53	60	21	11
22	300	702	480	600	1,180	425	605	380	46	36	21	11
23	150	805	480	400	735	340	485	254	38	26	21	11
24	100	987	2,000	320	485	455	392	245	31	31	26	11
25	85	1,340	2,000	260	425	425	360	320	28	24	56	11
26	85	1,740	1,060	260	425	420	340	282	28	20	81	11
27	75	3,200	875	220	392	605	306	214	27	21	78	11
28	70	4,460	637	220	365	2,060	263	181	31	18	58	11
29	70	3,650	575	220	------	2,060	236	146	31	21	36	11
30	60	2,390	515	220	------	1,900	219	119	28	24	27	11
31	86	------	425	280	------	1,980	------	106	------	34	24	------

Note.—Discharge estimated, Oct. 22-24, Nov. 1-4, 12-13, Dec. 1-4, 20-25. May 6, 20-22, June 12, July 3-7 and Aug. 8-12, because of unsatisfactory gage height record, and Oct. 25-29 because of no gage height record, from comparison of gage height and discharge graphs with Chartiers Creek at Carnegie, Slippery Rock Creek at Wurtemburg, Neshannock Creek at Eastbrook Station and Crooked Creek at Hileman's Farm

Discharge Jan. 1-4, Jan. 8 to Feb. 11 and Feb. 14-21 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Slippery Rock Creek at Wurtemburg, Neshannock Creek at Eastbrook Station, Mahoning Creek near Daytona and Crooked Creek at Hileman's Farm.

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Monthly discharge of Connoquenessing Creek near Hazen, for the year ending Sept. 30, 1922

(Drainage area 355 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	340	60	109	0.307	0.35
November	4,460	268	1,380	3.89	4.34
December	3,200	425	944	2.66	3.07
January	1,660	220	452	1.27	1.46
February	1,180	220	485	1.37	1.43
March	4,370	282	1,260	3.55	4.09
April	5,630	219	1,090	3.07	3.43
May	650	106	256	.721	.83
June	500	27	112	.316	.35
July	550	15	61.6	.174	.20
August	130	18	50.1	.141	.16
September	166	11	24.3	.068	.08
The Year	5,630	11	517	1.46	19.79

OHIO BASIN—STATION NO. 39

SLIPPERY ROCK CREEK AT WURTEMBURG

Location.—At three-span steel highway bridge, Wurtemburg, Lawrence County, about one and a half miles above mouth of creek.

Drainage Area.—400 square miles.

Records Available.—January 1, 1912, to September 30, 1922.

Gage.—Standard chain attached to upstream side of bridge; read by Miss Grace Barton Wright. Elevation of gage zero 817.63 feet, United States Geological Survey datum.

Discharge Measurements.—Made from upstream side of bridge or by wading.

Channel and Control.—Banks are high and not subject to overflow. Bed is composed of sand and gravel. Low-water control is a sand and gravel bar about 200 feet below gage; may shift occasionally.

Extremes of Discharge.—Maximum open-water stage during the year, estimated from hydrograph, 5.77 feet at 11 a. m. November 2 (discharge, 4,150 second-feet); a stage of 6.52 feet, estimated from hydrograph, was reached at 10 a. m. February 13, but the water was held back by an ice jam; minimum, 1.90 feet at 6 p. m. August 27, September 27 and 30 (discharge, 48 second-feet).

Ice.—Stage-discharge relation usually affected by ice.

Accuracy.—Stage-discharge relation permanent throughout the year except when affected by ice. Rating curve fairly well defined between 50 and 5,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying daily mean gage height to rating table. Results fair.

Discharge measurements of Slippery Rock Creek at Wurtemburg, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec. ft.
33	Dec. 23	C. B. McElrath	2.96	472
34	Mar. 18a	do	3.07	687
35	Apr. 21a	do	3.22	773
36	21a	do	3.21	772
37	May 16a	do	2.28	178
38	16a	do	2.27	175
39	27a	do	2.54	330
40	27a	do	2.52	315
41	June 13a	do	2.61	337
42	13a	do	2.56	329

a Measurement made at highway bridge about 3,200 feet below gage.

Daily Mean Gage Height, in feet, of Slippery Rock Creek at Wurtemburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.47	3.57	3.62	2.60	2.68	2.70	4.82	2.41	2.14	2.16	2.00	2.10
2	2.50	5.39	3.43	2.60	3.12	2.65	4.60	2.35	2.14	2.14	2.24	2.31
3	2.90	4.90	3.25	2.72	3.70	2.70	3.95	2.36	2.15	2.48	2.26	2.11
4	2.35	4.02	3.28	2.79	3.20	2.62	3.73	2.40	2.18	2.90	2.26	2.09
5	2.45	3.29	3.15	3.87	2.94	2.55	3.64	2.48	2.16	2.46	2.14	2.10
6	2.59	2.92	3.04	3.86	2.86	2.84	3.32	2.55	2.18	2.20	2.07	2.14
7	2.45	2.83	2.96	3.18	3.04	4.76	3.10	2.65	2.17	2.10	2.04	2.09
8	2.49	2.74	2.90	2.85	3.06	5.55	3.02	2.60	2.09	2.06	2.34	2.02
9	2.73	2.64	2.90	2.82	2.94	4.29	3.00	2.42	2.09	2.04	2.24	2.01
10	2.68	2.90	2.84	2.75	2.77	3.92	2.93	2.38	2.45	2.03	2.19	2.10
11	2.61	3.19	2.78	2.56	2.92	4.17	3.26	2.36	2.75	2.00	2.11	2.01
12	2.56	3.15	3.02	2.60	3.99	4.75	3.80	2.32	3.18	1.99	2.02	2.11
13	2.39	3.18	3.30	2.75	6.16	4.04	3.49	2.25	2.58	2.05	2.02	2.02
14	2.35	3.00	3.05	2.68	5.58	3.87	3.88	2.22	2.32	2.16	1.97	2.02
15	2.52	3.45	2.95	2.66	4.80	4.16	5.20	2.20	2.20	2.15	2.01	1.98
16	2.31	3.48	2.85	2.46	4.28	3.79	4.50	2.24	2.10	-------	1.99	2.00
17	2.28	3.72	3.07	2.47	3.70	3.32	4.02	2.24	2.10	-------	1.97	2.00
18	2.12	4.45	4.46	2.66	3.83	3.05	4.34	2.36	2.14	-------	1.96	2.06
19	2.26	4.18	4.28	3.22	4.38	2.90	4.14	2.55	2.07	-------	2.12	2.00
20	2.34	4.08	3.50	3.60	5.15	2.95	3.84	3.35	2.06	-------	2.02	2.02
21	2.70	3.82	3.24	3.36	4.90	2.89	3.30	3.32	2.06	-------	2.00	2.02
22	2.73	3.26	2.97	3.04	3.96	2.74	3.02	2.88	2.02	-------	2.02	1.98
23	2.60	3.16	2.90	2.86	3.64	2.72	2.87	2.60	2.00	-------	1.97	2.02
24	2.42	3.44	3.08	2.76	3.62	2.90	2.74	2.48	2.02	-------	2.00	2.00
25	2.37	4.01	3.02	2.71	3.08	3.12	2.68	2.41	2.02	-------	1.95	1.97
26	2.32	4.17	2.95	2.65	2.89	3.01	2.68	2.63	1.96	2.04	1.96	1.96
27	2.28	4.76	2.92	2.72	2.92	3.42	2.64	2.55	1.99	2.21	1.95	1.92
28	2.28	5.24	2.91	2.78	3.00	4.81	2.58	2.48	2.22	2.14	2.00	1.98
29	2.26	4.70	2.75	2.72	-------	5.00	2.52	2.28	2.64	2.04	2.00	1.98
30	2.26	4.04	2.70	2.72	-------	4.56	2.46	2.21	2.36	2.02	2.00	1.95
31	2.38	-------	2.78	2.77	-------	4.60	-------	2.16	-------	1.98	1.99	-------

Note.—Stage-discharge relation Dec. 24 to Jan. 4, Jan. 9-17 and Jan. 23 to Feb. 22 affected by ice. Gage height July 16-25 not observed.

Daily discharge, in second-feet, of Slippery Rock Creek at Wurtemburg, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	278	1,110	1,110	240	300	415	2,410	245	116	124	70	100
2	295	3,760	975	240	340	382	2,160	212	116	116	158	191
3	240	2,550	975	300	950	415	1,500	218	120	284	218	104
4	212	1,500	850	420	550	350	1,200	240	132	550	167	97
5	268	850	732	1,400	380	322	1,110	284	124	273	116	100
6	350	550	657	1,400	300	515	850	322	132	140	91	116
7	268	515	585	770	240	2,410	695	382	128	100	82	97
8	290	447	550	515	240	3,760	620	350	97	88	207	76
9	447	382	550	440	240	1,820	620	251	97	82	158	73
10	415	550	515	340	260	1,400	585	229	268	79	136	100
11	350	770	480	300	320	1,710	810	218	447	70	104	73
12	295	732	620	240	650	2,410	1,300	196	770	68	76	104
13	234	770	850	240	1,200	1,500	1,020	162	350	85	76	76
14	212	620	657	220	700	1,400	1,400	149	196	124	63	76
15	196	975	585	220	440	1,710	3,030	140	140	120	73	66
16	191	1,020	515	220	300	1,300	2,040	158	100	120	68	70
17	176	1,200	657	240	260	850	1,500	158	100	120	63	70
18	108	1,930	2,040	382	300	657	1,820	218	116	180	61	88
19	167	1,710	1,820	770	380	550	1,600	322	91	440	108	70
20	207	1,600	1,020	1,110	700	585	1,300	890	88	380	76	76
21	415	1,300	810	890	1,100	550	850	850	88	200	70	76
22	447	890	585	657	1,200	447	620	550	76	130	76	66
23	350	732	550	440	1,110	415	515	350	70	120	63	76
24	251	975	480	340	1,110	550	447	284	76	160	70	70
25	224	1,500	420	300	695	695	415	245	76	130	59	63
26	196	1,710	340	240	550	620	415	382	61	82	61	61
27	176	2,410	320	240	550	930	382	322	68	144	59	52
28	176	3,030	300	260	620	2,410	350	284	149	116	70	66
29	167	2,280	260	320	-------	2,700	295	176	382	82	70	66
30	167	1,500	240	320	-------	2,160	273	144	218	76	70	59
31	229	-------	240	300	-------	2,160	-------	124	-------	66	68	-------

Note.—Discharge Dec. 24 to Jan. 4, Jan. 9-17 and Jan. 23 to Feb. 22 estimated, because of ice, from weather records, study of gage height graph and comparison with similar studies for Shenango River at Sharon, Chartiers Creek at Carnegie and Crooked Creek at Hileman's Farm. Discharge July 16-25 estimated, because of no gage height record, from discharge at stations in adjacent drainage areas.

Monthly discharge of Slippery Rock Creek at Wurtemburg, for the year ending Sept. 30, 1922

(Drainage area 400 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
October	447	108	258	0.645	0.74
November	3,760	382	1,330	3.32	3.71
December	2,040	240	687	1.72	1.98
January	1,400	220	462	1.16	1.34
February	1,200	240	571	1.43	1.49
March	3,760	322	1,230	3.08	3.55
April	3,030	273	1,070	2.68	2.99
May	890	124	292	.730	.84
June	770	61	166	.415	.46
July	550	66	156	.390	.45
August	218	59	93.8	.234	.27
September	191	52	82.6	.206	.23
The Year	3,760	52	531	1.33	18.05

OHIO BASIN—STATION NO. 40

RACCOON CREEK AT MOFFATT'S MILL

Location.—At single-span steel highway bridge, about four miles west of Woodlawn, at Moffatt's Mill, Beaver County.

Drainage Area.—178 square miles.

Records Available.—May 27, 1915, to September 30, 1922.

Gage.—Standard chain attached to downstream side of bridge; read by Henry Schissler twice daily to half-tenths previous to August 3; to hundredths since that date.

Discharge Measurements.—Made from downstream side of bridge or by wading.

Channel and Control.—Both banks are high and not subject to overflow. Bed is composed of rocks and rock shingle; permanent. Control is at a riffle about 100 feet below gage. Stage-discharge relation may be affected by vegetable growth at control section during summer months.

Extremes of Stage.—Maximum gage height during the year, 9.80 feet observed at 7 a. m. April 15; minimum, 1.66 feet from September 27 to 30.

Ice.—Stage-discharge relation usually affected by ice.

Cooperation.—Station is maintained in cooperation with United States Engineer Office, Pittsburgh.

Discharge measurements of Raccoon Creek at Moffatt's Mill, during the year ending Sept. 30, 1922

No.	Date	Made by	Gage height	Discharge
			Feet	Sec.-ft.
11	Dec. 24	C. B. McElrath	5.47	2,450
12	June 14	do	2.33	54.3
13	14	do	2.31	53.5
14	Aug. 3a	do	1.80	5.65

a Wading measurement 1,200 feet above gage.

Daily Mean Gage Height, in feet, of Raccoon Creek at Moffatt's Mill, for the year ending Sept. 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.55	4.09	3.50	2.85	2.80	2.70	5.32	2.45	2.27	2.22	1.75	1.72
2	2.55	3.93	3.38	2.68	3.00	2.70	4.18	2.48	2.40	2.18	1.70	2.60
3	2.50	3.31	3.28	2.98	2.85	2.72	3.68	2.50	2.43	2.40	1.70	2.52
4	2.50	3.04	3.18	2.95	2.65	2.80	3.40	2.72	2.37	2.60	1.78	2.30
5	2.45	2.85	3.08	3.48	2.55	2.82	3.20	3.02	2.33	2.22	1.88	2.19
6	2.48	2.72	2.98	3.25	2.60	3.34	3.08	2.88	2.27	2.15	1.76	2.02
7	2.38	2.62	2.95	3.00	2.90	4.23	3.00	2.72	2.23	2.10	1.74	1.82
8	2.30	2.52	2.92	2.92	2.65	4.02	2.95	2.62	2.20	2.08	1.77	1.77
9	2.30	2.52	2.88	2.88	2.75	3.50	2.95	2.55	2.23	2.05	1.80	1.74
10	2.30	2.70	2.88	2.82	2.75	3.28	2.98	2.50	2.27	2.02	1.95	1.70
11	2.25	2.85	2.95	2.80	2.65	3.58	3.25	2.62	2.33	1.98	1.88	1.80
12	2.25	2.95	2.95	2.88	3.00	3.50	3.18	2.52	2.43	1.92	1.81	2.42
13	2.25	3.20	2.95	2.70	3.52	3.28	3.08	2.45	2.43	1.95	1.79	2.38
14	2.22	3.25	2.92	2.80	3.02	3.35	3.30	2.45	2.25	1.98	1.76	2.03
15	2.28	3.95	2.88	2.68	2.78	3.60	7.54	2.42	2.25	2.00	1.74	1.91
16	2.22	3.59	3.06	2.55	2.58	3.32	4.42	2.40	2.20	1.95	1.71	1.86
17	2.20	4.56	4.02	2.52	2.55	3.12	3.75	2.40	2.60	1.96	1.69	1.82
18	2.15	4.33	3.82	2.55	2.85	3.02	3.50	2.50	2.55	2.15	1.68	1.80
19	2.15	3.80	3.48	3.10	3.08	3.00	3.22	2.65	2.38	2.25	1.84	1.74
20	2.18	3.60	3.28	3.55	3.35	2.98	3.15	3.08	2.22	2.08	2.25	1.72
21	2.35	3.35	3.15	3.18	3.08	2.92	3.10	2.85	2.18	2.00	2.01	1.70
22	2.25	3.12	2.95	2.92	3.08	2.88	3.02	2.68	2.15	1.95	1.82	1.74
23	2.22	3.05	3.11	2.88	3.12	2.82	2.88	2.58	2.10	1.95	1.80	1.72
24	2.18	3.24	5.07	2.90	3.18	2.78	2.78	2.56	2.05	1.92	1.76	1.70
25	2.10	3.64	4.25	2.80	3.02	2.72	2.72	2.55	2.05	1.90	1.78	1.70
26	2.10	3.81	3.62	2.95	2.80	2.68	2.68	2.93	2.00	1.90	1.80	1.70
27	2.10	4.36	3.40	3.05	2.85	2.90	2.62	2.60	2.00	1.88	1.80	1.66
28	2.10	5.05	3.15	3.02	2.82	3.68	2.60	2.47	2.14	1.85	1.80	1.66
29	2.08	4.29	3.08	3.05	-------	3.55	2.55	2.40	3.15	1.82	1.76	1.66
30	2.05	3.78	2.92	2.85	-------	3.75	2.50	2.35	2.40	1.80	1.76	1.66
31	2.85	-------	2.85	2.82	-------	4.39	-------	2.33	-------	1.78	1.72	-------

TABLE NO. X

Miscellaneous Discharge Measurements made during the year ending September 30, 1922

Stream	Location	Date	Gage height	Discharge	Drainage area	Run-off Second-feet per Square Mile
			Feet	Sec.-ft.	Sq. Mi.	
Monocacy Creek --	Bethlehem, Northampton County	June 22	-------	61.2	49.6	1.23
Lackawaxen River_	Hawley, Wayne County _	July 8	2.41	419	290	1.44
Lackawaxen River_	Hawley, Wayne County _	Aug. 23	.48	76.6	290	.26

TABLE NO. XI

Summary of Run-off in Second-feet per Square Mile, Run-off depth in inches, Precipitation and Per Cent run-off to Precipitation, for the Year ending September 30, 1922

Delaware Basin.

Station	Drainage Area	Run-off in Second-feet per Square Mile													Run-off	Precipitation	Per Cent
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to Precipitation
Wallenpaupack Creek at Wilsonville	227	0.276	1.38	2.80	0.789	2.08	4.76	3.23	1.25	2.44	1.22	0.445	0.359	1.75	23.74	42.7	55.5
Delaware River at Port Jervis, N. Y.	3,070	.554	2.77	2.60	.805	2.09	4.76	4.14	1.58	3.01	1.34	.632	.518	2.06	27.98	44.9	62.3
Bushkill Creek near Shoemakers	115	.213	.826	2.46	1.40	2.42	5.49	3.83	2.80	2.93	1.43	.335	.301	2.03	27.62	47.0	58.8
McMichaels Creek near Stroudsburg	62	.429	1.16	2.15	1.17	2.19	4.37	3.60	2.00	1.85	1.45	.616	.526	1.79	24.29	43.5	55.8
Lehigh River at Tannery	335	.540	1.97	3.64	1.10	2.62	5.70	4.57	2.38	3.67	1.98	.666	.630	2.45	33.28	45.1	73.8
Lehigh River at Bethlehem a	1,240	.389	1.18	2.58	.746	2.41	4.80	3.60	2.48	3.02	1.39	.480	.480	1.96	26.58	42.0	63.3
Delaware River at Riegelsville b	6,430	.507	1.76	2.36	.754	1.69	4.49	3.67	1.87	2.49	1.39	.575	.586	1.85	25.02	44.1	56.7
Little Schuylkill River at Tamaqua c	44	.391	2.01	4.16	1.09	2.66	6.84	4.18	4.00	4.75	1.27	.420	.202	2.66	36.15	49.2	73.5
Schuylkill River at Reading d	900	.286	1.22	2.33	.649	2.61	3.91	1.81	2.49	2.86	1.33	.494	.308	1.69	22.88	44.7	51.2
Brandywine Creek at Chadds Ford	285	.341	.614	.653	.667	2.67	1.92	1.19	1.05	1.38	1.14	.544	.453	1.04	14.11	39.1	36.1

a Run-off does not include the water delivered past the gage through the Lehigh Coal and Navigation Company Canal. Canal was closed Nov. 19 to Apr. 23.

b Run-off includes 230 second-feet, estimated quantity of water diverted past the gage through the Delaware Division of the Pennsylvania Canal. Canal was closed Dec. 10 to Mar. 4.

c Run-off includes the quantity of water diverted from the stream by the Panther Valley Water Company.

d Run-off does not include the water diverted past the gage through the Schuylkill Navigation Company Canal. Canal was closed Nov. 1 to May 31.

TABLE NO. XII

Summary of Run-off in Second-feet per Square Mile, Run-off depth in inches, Precipitation and Per Cent run-off to Precipitation, for the Year ending September 30, 1922

Susquehanna Basin.

Station	Drainage Area	Run-off in Second-feet per Square Mile													Run-off	Precipitation	Per Cent
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to Precipitation
North Branch Susquehanna River at Towanda	7,770	0.273	2.38	1.60	0.719	1.74	3.40	3.51	0.904	2.64	1.11	0.687	0.514	1.61	21.91	42.1	52.1
Towanda Creek near Monroeton	218	.120	2.14	1.99	.610	2.10	3.47	2.59	1.16	2.48	.532	.113	.089	1.44	19.55	39.4	49.5
Tunkhannock Creek at Dixon	392	.433	2.28	1.88	.667	1.51	3.33	3.16	.662	3.21	1.54	.310	.128	1.59	21.54	44.7	48.2
Lackawanna River at Moosic	265	.634	2.43	2.45	.951	2.05	3.77	4.00	1.66	3.50	2.64	.891	.491	2.12	28.74	42.4	67.8
North Branch Susquehanna River at Wilkes-Barre	9,960	.289	2.01	1.80	.633	1.56	3.30	3.24	.965	2.49	1.19	.556	.458	1.54	20.83	41.9	49.8
Wapwallopen Creek near Wapwallopen	46	.470	1.87	2.80	.861	1.82	3.41	3.26	1.48	2.07	.924	.192	.142	1.60	21.79	46.8	46.6
Nescopeck Creek near St. Johns	49	.586	2.49	3.16	.824	3.18	5.18	4.80	2.12	4.51	.894	.359	.263	2.35	31.89	47.8	66.7
Fishing Creek at Bloomsburg	355	1.11	2.84	2.37	.839	2.75	4.56	3.92	1.36	4.03	1.64	1.96	.175	2.14	29.03	43.9	66.1
North Branch Susquehanna River at Danville	11,200	.316	1.85	1.98	.663	1.67	3.38	3.47	.982	2.56	1.29	.521	.439	1.59	21.54	42.3	50.9
West Branch Susquehanna River at Bower	320	.356	4.94	2.78	1.78	2.79	3.31	3.44	.812	.825	.697	.179	.113	1.82	24.73	39.7	62.3
Clearfield Creek at Dimeling	370	.278	3.65	2.60	1.38	2.78	2.97	3.35	.903	.530	.841	.154	.074	1.62	21.90	38.1	57.5
Driftwood Branch Sinnemahoning Creek at Sterling Run	270	.667	5.78	1.79	1.02	2.17	4.15	4.33	1.36	1.44	.227	.140	.133	1.92	26.08	38.8	67.2
West Branch Susquehanna River at Renovo	2,990	.505	3.68	2.37	1.13	1.70	3.12	3.38	1.26	1.07	.545	.199	.188	1.59	21.57	37.9	56.9
Bald Eagle Creek at Milesburg	140	.209	3.56	1.86	.800	3.36	2.78	3.03	1.39	.362	.334	.182	.194	1.49	20.17	36.8	54.8
Bald Eagle Creek at Beech Creek Station	565	.480	2.46	2.21	.938	2.18	2.74	2.64	1.69	.859	.639	.373	.315	1.46	19.76	36.7	53.8
Pine Creek at Cedar Run	590	.331	2.53	1.60	.620	1.51	2.80	3.20	1.12	1.73	.610	.197	.175	1.37	18.58	34.2	54.4
Lycoming Creek near Trout Run	185	.376	2.32	1.95	.670	1.33	3.44	2.90	1.74	3.41	1.29	.326	.348	1.67	22.70	39.1	58.0
West Branch Susquehanna River at Williamsport	5,670	.469	2.96	2.36	.991	1.98	3.17	3.30	1.60	1.55	.672	.226	.175	1.62	21.90	37.5	58.4
Frankstown Branch Juniata River at Williamsburg	295	.366	2.50	2.21	1.06	2.22	2.38	2.49	.939	.458	.304	.223	.233	1.27	17.27	37.3	46.3
Raystown Branch Juniata River at Saxton	790	.241	1.44	2.47	1.11	2.46	2.89	1.78	1.14	.373	.223	.151	.135	1.19	16.21	36.0	45.0
Tuscarora Creek near Port Royal	205	.163	1.39	1.90	.893	2.64	2.66	1.49	.800	1.39	1.22	.232	.144	1.23	16.75	37.4	44.8
Juniata River at Newport	3,380	.340	1.41	2.23	.879	2.26	2.71	2.06	1.09	.793	.648	.250	.190	1.23	16.70	36.4	45.9
Susquehanna River at Harrisburg	24,100	.344	1.68	2.26	.647	1.93	3.16	3.06	1.22	1.91	1.04	.356	.329	1.49	20.21	40.2	50.3
Little Swatara Creek near Pine Grove	34	.163	1.46	2.51	1.00	3.35	4.09	1.87	2.44	1.47	1.66	.385	.162	1.70	23.14	44.5	52.0
Swatara Creek at Harpers	334	.163	1.04	2.29	.949	3.26	3.86	1.93	1.84	2.15	1.55	.288	.161	1.62	21.90	43.2	50.7

TABLE NO. XIII

Summary of Run-off in Second-feet per Square Mile, Run-off depth in inches, Precipitation and Per Cent run-off to Precipitation, for the Year ending September 30, 1922

Ohio Basin.

Station	Drainage Area	Run-off in Second-feet per Square Mile													Run-off	Precipitation	Per Cent
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Year	Depth in inches	Depth in inches	Run-off to Precipitation
Brokenstraw Creek at Youngsville	290	1.38	4.66	2.03	1.73	1.90	3.59	3.33	1.26	0.703	0.490	0.209	0.169	1.78	24.18	39.7	60.8
Tionesta Creek at Butler Bridge	420	.688	3.74	1.70	1.25	1.54	3.31	3.88	1.14	.912	.222	.348	.156	1.57	21.27	39.0	54.5
Oil Creek near Rouseville	330	.697	3.79	1.72	1.36	1.58	3.55	3.36	.903	.503	.267	.205	.193	1.50	20.43	39.2	52.1
French Creek at Kimmeytown	207	1.63	4.69	2.10	1.71	1.99	3.71	2.91	.647	.323	.205	.155	.111	1.68	22.75	37.4	60.9
French Creek at Saegertown	586	1.48	4.57	2.03	1.71	2.00	3.48	2.90	.824	.488	.324	.183	.120	1.67	22.65	38.0	59.6
Cussewago Creek near Meadville	88	.823	4.66	1.62	1.31	1.50	3.41	2.31	.402	.384	.153	.105	.024	1.39	18.82	42.8	44.0
French Creek at Carlton	1,000	1.24	4.35	1.92	1.66	1.97	3.33	2.98	.784	.598	.451	.454	.196	1.66	22.45	38.7	58.0
Allegheny River at Franklin	6,010	.962	3.71	1.90	1.46	1.93	3.24	3.41	1.03	1.08	.572	.451	.241	1.66	22.53	40.1	56.2
Clarion River near Clarion	930	.786	4.30	2.01	1.12	1.44	3.65	4.13	1.04	1.13	.320	.266	.178	1.69	22.98	37.5	61.3
Red Bank Creek at Saint Charles	540	.574	5.20	2.06	1.18	1.43	3.31	3.56	.726	.639	.233	.252	.126	1.60	21.73	36.6	59.4
Mahoning Creek near Dayton	322	.457	4.97	2.26	1.34	1.69	3.06	2.96	.590	.792	.370	.199	.090	1.56	21.15	37.9	55.8
Allegheny River at Kittanning	9,010	.785	3.97	3.25					1.08	.940	.482	.361	.188			39.0	
Crooked Creek at Hileman's Farm	279	.254	5.66	2.72	1.46	1.67	3.42	3.27	.358	.348	.520	.154	.025	1.65	22.37	39.1	57.2
Stony Creek at Johnstown a	468	.714	3.80	4.19	1.53	2.22	3.80	3.29	1.33	.714	.532	.226	.199	1.87	25.43	38.9	65.4
Blacklick Creek at Blacklick	386	.409	4.15	2.82	1.32	1.61	2.56	2.85	.816	1.00	.972	.285	.104	1.57	21.31	42.9	49.7
Loyalhanna Creek at New Alexandria	264	.754	4.58	3.94	1.80	2.02	3.83	3.34	.936	.818	.273	.375	.184	1.90	25.79	43.8	58.9
Kiskiminitas River at Avonmore	1,720	.593	4.02	3.37	1.37	2.10	3.40	3.09	.895	.756	.616	.321	.176	1.72	23.35	41.1	56.8
Casselman River at Markleton	365	.899	3.07	3.95	1.76	2.73	3.95	2.85	1.33	.589	.458	.170	.085	1.81	24.63	41.8	59.0
Laurel Hill Creek at Ursina	122	1.22	5.30	4.79	1.84	3.03	4.67	3.92	1.06	1.08	.583	.289	.117	2.32	31.53	43.0	73.5
Youghiogheny River at Connellsville	1,320	.909	3.41	4.39	2.06	2.64	4.36	3.14	1.18	.711	.548	.192	.118	1.97	26.71	42.0	63.6
Youghiogheny River at Sutersville	1,680	.863	3.46	3.90	1.82	2.35	4.02	2.73	1.07	.649	.496	.184	.110	1.80	24.45	41.8	58.5
Turtle Creek near Trafford	55	.269	5.35	2.85	1.15	1.52	4.24	2.73	.898	.460	1.07	.045	.039	1.72	23.29	40.6	57.4
Chartiers Creek at Carnegie	260	.400	3.00	2.65	1.10	1.02	3.07	3.30	.642	.469	.379	.171	.170	1.36	18.51	37.4	49.5
Shenango River near Turnerville	152	1.00	4.40	1.36	.901	1.30	2.75	2.34	.355	.149	.192	.435				39.1	
Shenango River near Jamestown	182	.989	4.32	1.34	.940	1.29	2.77	2.31	.377	.156	.212	.419	.050	1.26	17.07	38.8	44.0
Little Shenango Fiver at Greenville	107	.746	3.64	1.38	.972	1.21	2.71	2.37	.699	.279	.200	.252	.095	1.21	16.40	36.8	44.6
Pymatuning Creek near Orangeville	170	.688	4.19	1.28	.841	1.25	2.56	2.95	.422	.099	.402	.158	.059	1.24	16.77	34.6	48.5
Shenango River at Sharon	611	.612	3.32	1.24	.871	1.28	2.47	2.37	.416	.135	.195	.224	.077	1.09	14.87	36.0	41.3
Shenango River at New Castle b	797	.496	2.99	1.14	.817	1.18	2.30	2.40	.400	.142	.186	.191	.067	1.01	13.73	35.6	38.6
Neshannock Creek at Eastbrook Station	235	.472	2.79	1.15	.711	1.46	2.40	2.72	.583	.265	.203	.141	.110	1.08	14.61	36.6	39.9
Connoquenessing Creek near Hazen	355	.307	3.89	2.66	1.27	1.37	3.55	3.07	.721	.316	.174	.141	.068	1.46	19.79	35.6	55.6
Slippery Rock Creek at Wurtemburg	400	.645	3.32	1.72	1.16	1.43	3.08	2.68	.730	.415	.390	.234	.206	1.33	18.05	36.8	49.0

a Run-off includes the quantity of water diverted from the Quemahoning Reservoir.
b Run-off includes the quantity of water diverted from the stream at the New Castle Water Works.

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